

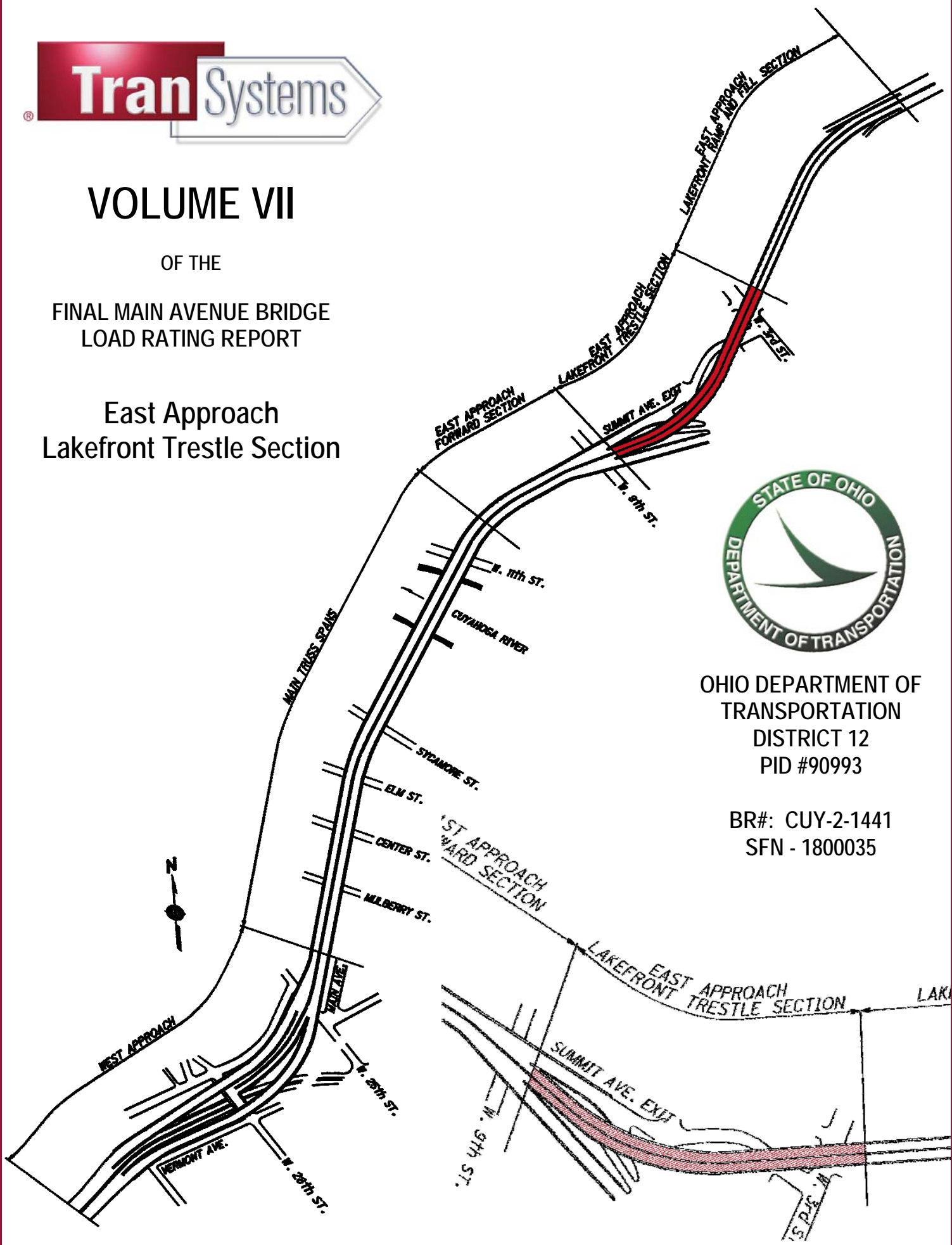


# VOLUME VII

OF THE

FINAL MAIN AVENUE BRIDGE  
LOAD RATING REPORT

## East Approach Lakefront Trestle Section



OHIO DEPARTMENT OF  
TRANSPORTATION  
DISTRICT 12  
PID #90993

BR#: CUY-2-1441  
SFN - 1800035

## Volume VII - Section Description

The CUY-2-1441 (Main Avenue) Bridge carries four to six lanes of State Route 2 traffic for 6580 feet through downtown Cleveland, over numerous local streets, RTA railroad tracks, Norfolk Southern/CSX railroad tracks and the Cuyahoga River. The bridge was fabricated and erected from 1938 to 1940. The West Approach, Main Truss Spans, and East Approach – Forward sections were opened to traffic on October 6, 1939; and the Lakefront Trestle and Lakefront Ramp were opened to traffic in 1940. The bridge was closed for a major rehabilitation project from April 13, 1991 to October 6, 1992. Work included replacing and widening of the deck, updating safety features, improving the drainage system, installing new floor system members, and strengthening or replacing deteriorated sections. The Main Avenue Bridge consists of five distinct sections (West Approach, Main Truss Spans, East Approach – Forward Section, East Approach – Lakefront Trestle, East Approach – Lakefront Ramp Section) of varying structure types within each section.

The East Approach – Lakefront Trestle (including “Section H” of the Lakefront Ramp) starts at West 9<sup>th</sup> Street and continues to West 3<sup>rd</sup> Street carrying four lanes of traffic. The Lakefront Trestle superstructure is supported by two lines of longitudinal rigid steel frames composed of riveted built-up beams and columns built-up with two rolled sections. Transverse rolled steel floorbeams frame into the longitudinal frames and support rolled stringers. There are 26 units of stringers composed of simple span, 2-span continuous or 3-span continuous stringers. The stringer spans are typically between 20'-0" and 35'-0". The girders are continuous and span between the columns with span lengths ranging from 28'-0" to 84'-0".



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## TABLE OF CONTENTS

Trestle – Deck Rating .....	1
Trestle – Stringer Rating .....	5
Trestle – Floorbeam Rating .....	848
Trestle – Girder Rating .....	897
Trestle – Column Rating .....	1421
Trestle – Bracket Rating .....	1629
Trestle – Pin & Link Rating .....	1648
Trestle – STAAD MODEL INPUT	
Geometry/ Dead Loads .....	1653
Example Live Load (Maximizing Girders and Columns).....	1691
Example Live Load (Maximizing Fascia Stringers) .....	1746
Example Live Load (Maximizing Floorbeam Positive Moment).....	1785



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**BRIDGE LOAD RATING SUMMARY REPORT**

**CUY-2-1441**

**Lakefront Trestle**

SFN	BRIDGE NUMBER	DISTRICT
1800035	CUY-2-1441	12
ORIGINAL CONSTRUCTION YEAR	REHABILITATION YEAR	OVERALL STRUCTURE LENGTH (FT)
1938 - 1940	1991 - 1992	6580
<b>FEATURE INTERSECTED:</b>	NUMEROUS LOCAL STREETS, RTA RAILROAD TRACKS AND THE CUYAHOGA RIVER	
<b>SPECIAL ASSUMPTIONS &amp; COMMENTS</b>		
<b>RATING &amp; ANALYSIS OPTION:</b>		
<b>LOAD RATING PURPOSE:</b>	LOAD RATING FOR FUTURE REHABILITATION RECOMMENDATIONS	
<b>RATING SOFTWARE:</b>	STAAD	
<b>BASIS OF ANALYSIS:</b>	EXISTING PLANS AND FIELD MEASUREMENTS	
<b>METHOD OF ANALYSIS:</b>	LOAD FACTOR	
<b>DESIGN LOADING (ORIGINAL):</b>	H20-33	
<b>STRUCTURE RATING SUMMARY</b>		
LOADING & RATING TYPE	RATING FACTOR - RF (ROUNDED TO 2 DECIMAL POINTS)	RATING LOAD
INVENTORY CURRENT DESIGN	0.74	HS15.2
OPERATING CURRENT DESIGN	1.24	
OHIO LEGAL - 2F1	1.93	<b>OHIO LEGAL LOADS OVERALL MINIMUM RATING FACTOR</b>
OHIO LEGAL - 3F1	1.35	1.28
OHIO LEGAL - 4F1	1.28	<b>OHIO LEGAL LOADS OVERALL CONTROLLING TRUCK</b>
OHIO LEGAL - 5C1	1.43	5C1
RATED BY, PE#	REVIEWED BY, PE#	REPORT DATE
George Dai, PE 73577	Carolyn Guion, PE 75189	4/13/2012
AGENCY/FIRM	PHONE NUMBER	EMAIL
TranSystems	216-861-1780	hgdai@transystems.com

**SFN: 1800035 BRIDGE NO.: CUY-2-1441**

## East Approach - Lakefront Trestle and Section H

**CUY-2-1441 Load Rating Analysis**  
**Main Ave Bridge**

Calculated: CTG 4/13/2012  
 Checked: DMP 4/13/2012  
 Revised: CTG 5/14/2012  
 Revised: DWC 6/21/2012

### As-Built Controlling Rating Factor Summary

Item	Location/Member	HS20 Inventory	HS20 Operating	2F1 Operating	3F1 Operating	4F1 Operating	5C1 Operating
Deck	Deck	1.19	1.99	3.19	3.75	4.54	3.75
Stringers	S2-5	0.74	1.24	1.93	1.35	1.28	1.43
Floorbeam	G5	0.81	1.36	2.84	1.89	1.65	1.90
Girder	South G20-21	1.05	1.75	3.65	2.42	2.12	2.18
	North G32-33	1.11	1.86	3.95	2.64	2.34	2.06
Pin & Link	34 N	2.47	4.13	8.68	5.79	5.06	5.76
Column	33S	2.21	3.69	5.68	3.68	2.93	2.26

### As-Inspected Controlling Rating Factor Summary\*

Item	Location/Member	HS20 Inventory	HS20 Operating	2F1 Operating	3F1 Operating	4F1 Operating	5C1 Operating
Deck	Deck	1.19	1.99	3.19	3.75	4.54	3.75
Stringers	S2-5	0.74	1.24	1.93	1.35	1.28	1.43
Floorbeam	G5	0.81	1.36	2.84	1.89	1.65	1.90
Girder	South G20-21	1.05	1.75	3.65	2.42	2.12	2.18
	North G32-33	1.11	1.86	3.95	2.64	2.34	2.06
Pin & Link	34 N	2.47	4.13	8.68	5.79	5.06	5.76
Column	33S	2.21	3.69	5.07	3.68	2.93	2.26

\*Section loss is present, but does not affect the controlling rating factors

\*\*Remaining Fatigue Life for Column was not calculated because it was deemed not to govern

### Overall Summary

Case	Rating Factor	Tonnage	HS equivalent or Ohio Legal Load %
HS20 Inventory	0.74	26.64	HS14.8
HS20 Operating	1.24	44.64	HS24.8
2F1	1.93	28.95	130%
3F1	1.35	31.05	
4F1	1.28	34.56	
5C1	1.43	57.20	
Fatigue	-21 Years Remaining		



# DECK RATING



## Deck Rating - East Approach - Lakefront Ramp Trestle Section

### Material Properties:

Concrete:  $f'_c = 4500 \text{ psi}$   
 $w_c = 112 \text{ pcf}$

(A.B. plans G7/A3, G9/93)

Rebar:  $f'_s = 24 \text{ ksi}$   
 $f_y = 60 \text{ ksi}$

### Deck Geometry:

Beam Spacing: 7.0 ft

Stringers: W18x55  $b_f = 7.53''$

Effective span length =  $7.0' - \frac{7.53''}{12} (\frac{1}{2}) = 6.69''$

Deck Thickness = 6.75''

Wearing Surface = 1.25'' Latex Concrete

Rebar Cover = 3'' - 1.25'' = 1.75'' CLR Top

1'' CLR Bottom

Transverse Rebar = Top #6 @ 7'' Bottom #5 @ 7'' (pg 457)

### Dead Load:

Slab =  $\frac{6.75''}{12''} \times 1' \times 112 = .063 \text{ k/ft}$

Wearing Surface =  $\frac{1.25''}{12''} \times 1' \times 15 = .016 \text{ k/ft}$

DL Moment =  $\frac{1}{8} \times (.063 + .016) \times 6.69^2 \times .8 = .354 \text{ k-ft}$

## Live Load:

$$\text{HS20: } P = 16\text{k} \quad M_{\text{HS}} = \left(\frac{S+2}{32}\right)(P)(1+I)(.8) = \left(\frac{6.69+2}{32}\right)(16)(1.3)(.8) \\ = 4.52 \text{ k-ft}$$

$$2 \text{ FI} \quad P = 10\text{k} \quad M_{2\text{FI}} = 2.82 \text{ k-ft}$$

$$3 \text{ FI} \quad P = 8.5\text{k} \quad M_{3\text{FI}} = 2.4 \text{ k-ft}$$

$$4 \text{ FI} \quad P = 7\text{k} \quad M_{4\text{FI}} = 1.98 \text{ k-ft}$$

$$5 \text{ CI} \quad P = 8.5\text{k} \quad M_{5\text{CI}} = 2.4 \text{ k-ft}$$

## Moment Capacity:

Check reinforcement ratio:

Balanced ratio:

$$\rho_b = \frac{.85\beta_1 f'_c}{f_y} \left( \frac{87000}{87000 + f_y} \right) = \frac{.85(.825)(4.5)}{60} \left( \frac{87000}{87000 + 60000} \right) \\ = .031 \quad .75\rho_b = .023$$

Actual Ratio:

$$\text{Top: } A_s = .44 \times \frac{12}{7} = .754 \text{ in}^2/\text{ft}$$

$$d_e = 6.75" - 1.75" - .5" - \frac{.75}{2} = 4.125"$$

$$\rho_1 = \frac{A_s}{b d_e} = \frac{.754}{(12)(4.125)} = .015 < .023 \text{ rebar controls}$$

$$\text{Bottom: } A_s = .31 \times \frac{12}{7} = .531 \text{ in}^2/\text{ft}$$

$$d_e = 6.75" - 1" - \frac{.625}{2} = 5.438"$$

$$\rho_2 = \frac{A_s}{b d_e} = \frac{.531}{(12)(5.438)} = .008 < .023 \text{ rebar controls}$$

Negative Moment Capacity:

$$a = \frac{A_s f_y}{.85 f'_c b} = \frac{.754 \times 60}{(.85)(4.5)(12)} = .986 \text{ in}$$

$$\phi M_n^- = \phi A_s f_y (d - \frac{a}{2})$$

$$= (.9)(.754)(60)(4.125 - \frac{.986}{2}) (\frac{1}{12}) = 12.32 \text{ k-ft}$$

Positive Moment Capacity:

$$a = \frac{.531(60)}{.85(4.5)(12)} = .694 \text{ in}$$

$$\phi M_n^+ = (.9)(.531)(60)(5.438 - \frac{.694}{2}) (\frac{1}{12}) = 12.16 \text{ k-ft}$$

↑ controls

Rating Factors:

HS20: Inventory  $R = \frac{C - 1.3D}{2.17(L+I)} = \frac{12.16 - 1.3(.354)}{2.17 \times 4.52} = 1.19$

Operating  $R = \frac{C - 1.3D}{1.3(L+I)} = \frac{12.16 - 1.3(.354)}{1.3(4.52)} = 1.99$

2F1:  $R = \frac{C - 1.3D}{1.3(L+I)} = \frac{12.16 - 1.3(.354)}{1.3(2.82)} = 3.19$

3F1:  $\frac{12.16 - 1.3(.354)}{1.3(2.4)} = 3.75$

4F1:  $\frac{12.16 - 1.3(.354)}{1.3(1.98)} = 4.54$

5C1:  $R = 3.75$

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# STRINGER RATING





Made By: CTG Date: 4/9/2012  
 Checked By: DMP Date: 4/13/2012

Job No.: P402110046

**Stringer Rolled Beam Capacity Calculations - As Built**

For Moment:  $M_u = F_y S_x$  or  $F_y Z_x$

$F_y = 36.00 \text{ ksi}$

$$\frac{b}{t} \leq \frac{4,110}{\sqrt{F_y}} = 21.6616$$

$$\frac{D}{t_w} \leq \frac{19,230}{\sqrt{F_y}} = 101.351$$

For Shear:  $V_u \text{ (kips)} = 0.58 * D * t_w * F_y * C$

$k = 5$

$$\frac{D}{t_w} \leq \frac{6000 \sqrt{k}}{\sqrt{F_y}} = 70.71068$$

$$\frac{D}{t_w} \leq \frac{7500 \sqrt{k}}{\sqrt{F_y}} = 88.38835$$

	W16x67	W16x77	W18x55	W18x65	W18x71	W18x76	W18x86	W18x97	W21x73	W21x83	W21x93	W21x101	W21x111	W24x84	W24x94	W24x104	W24x117
$b_f \text{ (in)} =$	10.2	10.3	7.53	7.59	7.64	11	11.1	11.1	8.3	8.36	8.42	12.3	12.3	9.02	9.07	12.8	12.8
$t_f \text{ (in)} =$	0.665	0.76	0.63	0.75	0.81	0.68	0.77	0.87	0.74	0.835	0.93	0.8	0.875	0.77	0.875	0.75	0.85
$d \text{ (in)} =$	16.3	16.5	18.1	18.4	18.5	18.2	18.4	18.6	21.2	21.4	21.6	21.4	21.5	24.1	24.3	24.1	24.3
$t_w \text{ (in)} =$	0.395	0.455	0.39	0.45	0.495	0.425	0.48	0.535	0.455	0.515	0.58	0.5	0.55	0.47	0.515	0.5	0.55
$S_x \text{ (in}^3) =$	117	134	98.3	117	127	146	166	188	151	171	192	227	249	196	222	258	291
$Z_x \text{ (in}^3) =$	130	150	112	133	146	163	186	211	172	196	221	253	279	224	254	289	327
$D/t_w =$	37.9	32.92	43.18	37.56	34.1	39.62	35.13	31.51	43.34	38.31	34.03	39.6	35.91	48	43.79	45.2	41.09
$b_f/t_f =$	15.34	13.55	11.95	10.12	9.43	16.18	14.42	12.76	11.22	10.01	9.05	15.38	14.06	11.71	10.37	17.07	15.06
Compact?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Shear C =	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

$V_u \text{ (kips)} =$	123.47	142.32	137.13	158.79	174.46	149.44	168.98	188.34	187.35	212.16	239.06	206.71	226.81	221.39	242.48	235.94	259.54
$M_u \text{ (kip-ft)} =$	390.00	450.00	336.00	399.00	438.00	489.00	558.00	633.00	516.00	588.00	663.00	759.00	837.00	672.00	762.00	867.00	981.00



Made By: CTG Date: 4/9/2012 Job No.: \_\_\_\_\_  
 Checked By: DMP Date: 4/13/2012 Sheet No.: \_\_\_\_\_

**Stringers Capacity - As Built**

Stringers	Shape	MEMBER CAPACITY							
		MOMENT (kip-ft)			SHEAR (kips)				
		Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Vu 1 <sup>st</sup> Support	Vu 2 <sup>nd</sup> Support	Vu 3 <sup>rd</sup> Support	Vu 4 <sup>th</sup> Support	
SECTION A	F1-1	Plate	1077.75	1077.75	---	163.61	163.61	163.61	---
	S1-1	W21x73	516.00	516.00	---	187.35	187.35	187.35	---
	S2-1	W21x73	516.00	516.00	---	187.35	187.35	187.35	---
	S3-1	W21x73	516.00	516.00	---	187.35	187.35	187.35	---
	S4-1	W21x73	516.00	516.00	---	187.35	187.35	187.35	---
	S5-1	W21x73	516.00	516.00	---	187.35	187.35	187.35	---
	S6-1	W21x73	516.00	516.00	---	187.35	187.35	187.35	---
	S7-1	W21x73	516.00	516.00	---	187.35	187.35	187.35	---
	F2-1	Plate	1264.26	1264.26	---	144.98	141.80	141.80	---
	F1-2	Plate	1051.70	1051.70	---	164.59	164.59	166.71	---
	S1-2	W21x73	516.00	516.00	---	187.35	187.35	187.35	---
	S2-2	W21x73	516.00	516.00	---	187.35	187.35	187.35	---
	S3-2	W21x73	516.00	516.00	---	187.35	187.35	187.35	---
	S4-2	W21x73	516.00	516.00	---	187.35	187.35	187.35	---
	S5-2	W21x73	516.00	516.00	---	187.35	187.35	187.35	---
	S6-2	W21x73	516.00	516.00	---	187.35	187.35	187.35	---
	S7-2	W21x73	516.00	516.00	---	187.35	187.35	187.35	---
	F2-2	Plate	1266.48	1266.48	---	141.80	141.80	144.79	---
	F1-3	Plate	1024.86	---	---	170.05	150.24	---	---
	S1-3	W24x84	672.00	---	---	301.10	254.49	---	---
	S2-3	W24x84	672.00	---	---	306.01	258.17	---	---
	S3-3	W24x84	672.00	---	---	323.18	269.21	---	---
	S4-3	W24x94	762.00	---	---	328.56	285.55	---	---
	S5-3	W24x94	762.00	---	---	328.56	290.92	---	---
	S6-3	W24x94	762.00	---	---	328.56	285.55	---	---
	S7-3	W24x94	762.00	---	---	328.56	288.24	---	---
	F2-3	Plate	1173.41	---	---	153.36	160.52	---	---
F1-4	Plate	994.19	---	---	140.94	174.09	---	---	
S1-4	W24x84	672.00	---	---	221.39	291.29	---	---	
S2-4	W24x84	672.00	---	---	221.39	296.20	---	---	
S3-4	W24x84	672.00	---	---	221.39	306.01	---	---	
S4-4	W24x94	762.00	---	---	242.48	328.56	---	---	
S5-4	W24x94	762.00	---	---	242.48	333.94	---	---	



Made By: CTG Date: 4/9/2012 Job No.: \_\_\_\_\_  
 Checked By: DMP Date: 4/13/2012 Sheet No.: \_\_\_\_\_

**Stringers Capacity - As Built**

Stringers	Shape	MEMBER CAPACITY							
		MOMENT (kip-ft)			SHEAR (kips)				
		Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Vu 1 <sup>st</sup> Support	Vu 2 <sup>nd</sup> Support	Vu 3 <sup>rd</sup> Support	Vu 4 <sup>th</sup> Support	
SECTION B	S6-4	W24x94	762.00	---	---	242.48	331.25	---	---
	S7-4	W24x94	762.00	---	---	242.48	336.62	---	---
	F2-4	Plate	1144.40	---	---	152.69	156.29	---	---
	F1A-5	Plate	1086.45	---	---	183.21	183.21	---	---
	F1B-5	Plate	1012.55	---	---	171.64	171.64	---	---
	S1-5	W18x76	489.00	491.04	---	149.44	298.16	226.39	---
	S2-5	W18x76	489.00	500.37	---	149.44	300.38	237.48	---
	S3-5	W18x76	489.00	489.00	---	149.44	149.44	253.01	---
	S4-5	W18x76	489.00	489.00	---	149.44	149.44	149.44	---
	S5-5	W18x76	489.00	489.00	---	149.44	149.44	149.44	---
	S6-5	W18x76	489.00	489.00	---	149.44	149.44	149.44	---
	S7-5	W18x76	489.00	489.00	---	149.44	149.44	149.44	---
	F2A-5	Plate	1214.69	---	---	149.40	149.40	---	---
	F2B-5	Plate	1163.71	---	---	154.32	154.32	---	---
	F1-6	Plate	870.76	---	---	207.62	112.56	---	---
	S1-6	W21x93	663.00	---	---	264.04	239.06	---	---
	S2-6	W21x93	663.00	---	---	276.15	239.06	---	---
	S3-6	W21x93	663.00	---	---	300.37	239.06	---	---
	S4-6	W21x93	663.00	---	---	300.37	239.06	---	---
	S5-6	W21x101	759.00	---	---	291.80	206.71	---	---
S6-6	W21x101	759.00	---	---	298.32	206.71	---	---	
S7-6	W21x101	759.00	---	---	307.46	206.71	---	---	
F2-6	Plate	1100.86	---	---	160.98	144.37	---	---	
F1-7	Plate	1017.63	---	---	111.09	207.62	---	---	
S1-7	W21x73	516.00	---	---	174.31	207.56	---	---	
S2-7	W21x73	516.00	---	---	182.63	219.44	---	---	
S3-7	W21x73	516.00	---	---	201.63	236.07	---	---	
S4-7	W21x83	588.00	---	---	221.46	256.41	---	---	
S5-7	W21x83	588.00	---	---	229.52	267.16	---	---	
S6-7	W21x83	588.00	---	---	226.83	259.09	---	---	
S7-7	W21x83	588.00	---	---	242.96	272.54	---	---	
F2-7	Plate	1011.53	---	---	156.60	171.78	---	---	
F1A-8	Plate	976.76	---	---	207.62	207.62	---	---	



Made By: CTG  
 Checked By: DMP

Date: 4/9/2012 Job No.: \_\_\_\_\_  
 Date: 4/13/2012 Sheet No.: \_\_\_\_\_

**Stringers Capacity - As Built**

Stringers	Shape	MEMBER CAPACITY							
		MOMENT (kip-ft)			SHEAR (kips)				
		Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Vu 1 <sup>st</sup> Support	Vu 2 <sup>nd</sup> Support	Vu 3 <sup>rd</sup> Support	Vu 4 <sup>th</sup> Support	
SECTION C	F1B-8	Plate	936.45	---	---	207.62	207.62	---	---
	F1C-8	Plate	896.70	---	---	207.62	207.62	---	---
	S1-8	W18x86	558.00	277.98	241.65	212.36	235.30	224.02	191.06
	S2-8	W18x97	633.00	338.64	301.26	236.38	276.19	265.02	205.66
	S3-8	W18x86	558.00	318.06	284.19	232.40	247.20	237.18	201.71
	S4-8	W18x86	558.00	342.03	300.96	239.29	254.09	242.19	205.47
	S5-8	W18x86	558.00	355.38	313.74	246.81	257.85	245.95	210.48
	S6-8	W18x86	558.00	377.97	337.62	249.94	264.11	252.84	214.86
	S7-8	W18x86	558.00	405.75	364.35	262.47	271.63	260.36	222.38
	F2A-8	Plate	960.84	---	---	178.75	178.75	---	---
	F2B-8	Plate	1084.01	---	---	183.52	183.52	---	---
	F2C-8	Plate	1046.40	---	---	188.38	188.38	---	---
	F1A-9	Plate	857.51	---	---	207.50	207.50	---	---
	F1B-9	Plate	762.00	---	---	187.92	187.92	---	---
	F1C-9	Plate	762.00	---	---	187.92	187.92	---	---
	S1-9	W18x97	633.00	241.29	237.03	197.28	217.14	215.75	183.32
	S2-9	W18x97	633.00	267.36	249.90	205.66	225.52	219.94	186.11
	S3-9	W18x97	633.00	285.15	298.71	219.62	231.11	235.30	208.45
	S4-9	W18x97	633.00	289.65	312.48	225.21	232.50	239.48	214.04
	S5-9	W18x86	558.00	286.29	286.29	222.38	237.81	237.81	209.85
	S6-9	W18x97	633.00	305.85	296.67	225.21	266.42	263.63	214.04
	S7-9	W18x97	633.00	359.73	340.59	233.59	253.45	247.86	222.41
	F2A-9	Plate	1008.13	---	---	193.68	193.68	---	---
	F2B-9	Plate	988.03	---	---	196.62	196.62	---	---
	F2C-9	Plate	969.26	---	---	199.47	199.47	---	---
	F1-10	Plate	828.49	---	---	201.62	76.83	---	---
	S1-10	W21x73	516.00	---	---	174.31	193.31	---	---
	S2-10	W21x73	516.00	---	---	176.69	188.56	---	---
	S3-10	W21x73	516.00	---	---	195.69	188.56	---	---
	S4-10	W21x83	588.00	---	---	210.70	197.26	---	---
S5-10	W21x83	588.00	---	---	216.08	197.26	---	---	
S6-10	W21x83	588.00	---	---	210.70	197.26	---	---	
S7-10	W21x83	588.00	---	---	218.77	98.39	---	---	



Made By: CTG  
 Checked By: DMP

Date: 4/9/2012 Job No.: \_\_\_\_\_  
 Date: 4/13/2012 Sheet No.: \_\_\_\_\_

**Stringers Capacity - As Built**

Stringers	Shape	MEMBER CAPACITY							
		MOMENT (kip-ft)			SHEAR (kips)				
		Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Vu 1 <sup>st</sup> Support	Vu 2 <sup>nd</sup> Support	Vu 3 <sup>rd</sup> Support	Vu 4 <sup>th</sup> Support	
F2-10	Plate	950.63	---	---	202.41	127.24	---	---	
SECTION D	F1-11	Plate	986.77	---	---	100.81	199.91	---	---
	S1-11	W18x86	558.00	---	---	168.98	177.28	---	---
	S2-11	W18x86	558.00	---	---	168.98	177.28	---	---
	S3-11	W18x86	558.00	---	---	168.98	199.83	---	---
	S4-11	W18x65	399.00	---	---	158.79	201.75	---	---
	S5-11	W18x65	399.00	---	---	158.79	206.45	---	---
	S6-11	W18x65	399.00	---	---	158.79	211.15	---	---
	S7-11	W18x65	399.00	---	---	158.79	215.85	---	---
	F2-11	Plate	950.63	---	---	117.45	202.41	---	---
	F1A-12	Plate	1010.42	---	---	204.07	204.07	---	---
	F1B-12	Plate	1042.66	---	---	207.62	207.62	---	---
	S1-12	W21x101	759.00	200.43	---	182.18	223.94	184.79	---
	S2-12	W21x101	759.00	224.04	---	179.57	229.16	190.01	---
	S3-12	W21x101	759.00	301.83	---	205.67	231.12	216.11	---
	S4-12	W21x101	759.00	301.83	---	210.89	231.12	221.33	---
	S5-12	W21x101	759.00	320.28	---	216.11	236.34	226.55	---
	S6-12	W21x101	759.00	362.16	---	221.33	246.78	229.16	---
	S7-12	W21x101	759.00	389.40	---	226.55	254.61	234.38	---
	F2A-12	Plate	950.63	---	---	202.41	202.41	---	---
	F2B-12	Plate	951.79	---	---	202.22	202.22	---	---
	F1-13	Plate	1075.20	---	---	207.62	94.94	---	---
	S1-13	W18x55	336.00	---	---	170.78	137.13	---	---
	S2-13	W18x55	336.00	---	---	174.86	137.13	---	---
	S3-13	W18x55	336.00	---	---	195.21	137.13	---	---
	S4-13	W18x71	438.00	---	---	220.16	174.46	---	---
	S5-13	W18x71	438.00	---	---	225.33	174.46	---	---
	S6-13	W18x86	558.00	---	---	227.91	168.98	---	---
	S7-13	W18x86	558.00	---	---	233.08	168.98	---	---
F2-13	Plate	933.28	---	---	205.24	121.37	---	---	
F1-14	Plate	1256.70	---	---	188.90	207.62	---	---	
S1-14	W24x94	762.00	---	---	199.52	199.52	---	---	
S2-14	W24x94	762.00	---	---	198.18	204.90	---	---	



Made By: CTG  
 Checked By: DMP

Date: 4/9/2012 Job No.: \_\_\_\_\_  
 Date: 4/13/2012 Sheet No.: \_\_\_\_\_

**Stringers Capacity - As Built**

Stringers	Shape	MEMBER CAPACITY							
		MOMENT (kip-ft)			SHEAR (kips)				
		Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Vu 1 <sup>st</sup> Support	Vu 2 <sup>nd</sup> Support	Vu 3 <sup>rd</sup> Support	Vu 4 <sup>th</sup> Support	
SECTION E	S3-14	W24x94	762.00	---	---	203.55	231.78	---	---
	S4-14	W24x104	867.00	---	---	207.50	237.51	---	---
	S5-14	W24x104	867.00	---	---	214.02	242.73	---	---
	S6-14	W24x104	867.00	---	---	219.24	240.12	---	---
	S7-14	W24x104	867.00	---	---	198.36	244.04	---	---
	F2-14	Plate	1008.13	---	---	130.66	193.68	---	---
	F1A-15	Plate	1334.53	---	---	207.62	207.62	---	---
	F1B-15	Plate	1413.63	---	---	207.62	207.62	---	---
	F1C-15	Plate	1494.00	---	---	207.62	207.62	---	---
	S1-15	W21x111	837.00	371.34	424.17	205.28	253.69	268.05	274.18
	S2-15	W21x111	837.00	439.83	487.89	211.02	347.65	360.57	279.92
	S3-15	W21x101	759.00	452.31	521.46	257.22	270.27	287.23	286.58
	S4-15	W21x101	759.00	380.65	447.87	236.99	250.04	268.31	294.41
	S5-15	W21x101	759.00	394.86	467.49	242.21	253.95	273.53	299.63
	S6-15	W21x101	759.00	390.11	462.57	242.21	252.65	272.22	299.63
	S7-15	W21x101	759.00	413.97	482.33	243.51	259.17	277.44	304.85
	F2A-15	Plate	1065.74	---	---	185.84	185.84	---	---
	F2B-15	Plate	959.83	---	---	178.89	178.89	---	---
	F2C-15	Plate	1008.46	---	---	172.18	172.18	---	---
	F1-16	Plate	1635.95	---	---	198.93	261.33	---	---
	S1-16	W24x94	762.00	---	---	264.04	237.16	---	---
	S2-16	W24x94	762.00	---	---	272.11	242.53	---	---
	S3-16	W24x94	762.00	---	---	290.92	265.38	---	---
	S4-16	W24x104	867.00	---	---	294.93	267.53	---	---
	S5-16	W24x104	867.00	---	---	300.15	275.36	---	---
	S6-16	W24x104	867.00	---	---	300.15	277.97	---	---
	S7-16	W24x104	867.00	---	---	305.37	285.80	---	---
	F2-16	Plate	1147.61	---	---	155.96	180.09	---	---
F1-17	Plate	1526.18	---	---	262.31	186.63	---	---	
S1-17	W24x104	867.00	---	---	235.94	321.03	---	---	
S2-17	W24x104	867.00	---	---	235.94	321.03	---	---	
S3-17	W24x104	867.00	---	---	235.94	321.03	---	---	
S4-17	W24x104	867.00	---	---	235.94	321.03	---	---	



Made By: CTG Date: 4/9/2012 Job No.: \_\_\_\_\_  
 Checked By: DMP Date: 4/13/2012 Sheet No.: \_\_\_\_\_

**Stringers Capacity - As Built**

Stringers	Shape	MEMBER CAPACITY							
		MOMENT (kip-ft)			SHEAR (kips)				
		Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Vu 1 <sup>st</sup> Support	Vu 2 <sup>nd</sup> Support	Vu 3 <sup>rd</sup> Support	Vu 4 <sup>th</sup> Support	
SECTION F	S5-17	W24x117	981.00	---	---	259.54	344.81	---	---
	S6-17	W24x117	981.00	---	---	259.54	344.81	---	---
	S7-17	W24x117	981.00	---	---	259.54	344.81	---	---
	F2-17	Plate	1230.03	---	---	336.69	148.00	---	---
	F1A-18	Plate	1596.25	---	---	161.93	161.93	---	---
	F1B-18	Plate	1781.01	---	---	148.00	148.00	---	---
	S1-18	W21x101	759.00	759.00	---	206.71	206.71	206.71	---
	S2-18	W21x101	759.00	759.00	---	206.71	206.71	206.71	---
	S3-18	W21x101	759.00	759.00	---	206.71	206.71	206.71	---
	S4-18	W21x101	759.00	759.00	---	206.71	206.71	206.71	---
	S5-18	W21x101	759.00	759.00	---	206.71	206.71	206.71	---
	S6-18	W21x101	759.00	759.00	---	206.71	206.71	206.71	---
	S7-18	W21x101	759.00	759.00	---	206.71	206.71	206.71	---
	F2A-18	Plate	1169.09	---	---	153.78	153.78	---	---
	F2B-18	Plate	1177.73	---	---	152.93	152.93	---	---
	F1-19	Plate	1875.65	---	---	141.89	352.35	---	---
	S1-19	W24x104	867.00	---	---	235.94	235.94	---	---
	S2-19	W24x104	867.00	---	---	235.94	235.94	---	---
	S3-19	W24x104	867.00	---	---	235.94	235.94	---	---
	S4-19	W24x104	867.00	---	---	235.94	235.94	---	---
S5-19	W24x104	867.00	---	---	235.94	235.94	---	---	
S6-19	W24x104	867.00	---	---	235.94	235.94	---	---	
S7-19	W24x104	867.00	---	---	235.94	235.94	---	---	
F2-19	Plate	1019.72	---	---	170.71	126.26	---	---	
F1-20	Plate	1336.04	---	---	370.95	139.11	---	---	
S1-20	W21x101	759.00	---	---	206.71	206.71	---	---	
S2-20	W21x101	759.00	---	---	306.81	294.41	---	---	
S3-20	W21x101	759.00	---	---	307.46	294.41	---	---	
S4-20	W21x101	759.00	---	---	294.41	294.41	---	---	
S5-20	W21x101	759.00	---	---	282.01	294.41	---	---	
S6-20	W21x101	759.00	---	---	269.61	294.41	---	---	
S7-20	W21x101	759.00	---	---	278.75	294.41	---	---	
F2-20	Plate	1082.79	---	---	133.11	183.67	---	---	





Made By: CTG  
 Checked By: DMP

Date: 4/9/2012 Job No.: \_\_\_\_\_  
 Date: 4/13/2012 Sheet No.: \_\_\_\_\_

**Stringers Capacity - As Built**

Stringers	Shape	MEMBER CAPACITY							
		MOMENT (kip-ft)			SHEAR (kips)				
		Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Vu 1 <sup>st</sup> Support	Vu 2 <sup>nd</sup> Support	Vu 3 <sup>rd</sup> Support	Vu 4 <sup>th</sup> Support	
SECTION G	F1-21	Plate	1355.36	1355.36	---	137.64	137.64	137.64	---
	S1-21	W18x86	558.00	558.00	---	168.98	168.98	168.98	---
	S2-21	W18x86	558.00	558.00	---	168.98	168.98	168.98	---
	S3-21	W18x86	558.00	558.00	---	168.98	168.98	168.98	---
	S4-21	W18x86	558.00	558.00	---	168.98	168.98	168.98	---
	S5-21	W18x86	558.00	558.00	---	168.98	168.98	168.98	---
	S6-21	W18x86	558.00	558.00	---	168.98	168.98	168.98	---
	S7-21	W18x86	558.00	539.97	---	168.98	314.57	249.94	---
	F2-21	Plate	1046.40	1046.40	---	188.38	188.38	188.38	---
	F1-22	Plate	1317.96	1317.96	---	140.54	140.54	176.66	---
	S1-22	W16x77	450.00	450.00	---	142.32	142.32	142.32	---
	S2-22	W16x77	450.00	450.00	---	142.32	142.32	142.32	---
	S3-22	W16x77	450.00	450.00	---	142.32	142.32	245.38	---
	S4-22	W16x77	450.00	450.00	---	142.32	142.32	226.37	---
	S5-22	W16x77	450.00	450.00	---	142.32	142.32	221.62	---
	S6-22	W16x77	450.00	450.00	---	142.32	142.32	209.75	---
	S7-22	W16x77	450.00	410.19	---	243.00	283.09	178.87	---
	F2-22	Plate	842.89	842.89	---	207.62	207.62	97.39	---
F1-1	Plate	1051.70	1175.57	1051.70	177.15	351.86	323.23	323.23	
S1-1	W16x67	390.00	390.00	390.00	123.47	123.47	123.47	123.47	
S2-1	W16x67	390.00	390.00	390.00	123.47	123.47	123.47	123.47	
S3-1	W16x67	390.00	390.00	390.00	123.47	123.47	123.47	123.47	
S4-1	W16x67	390.00	390.00	417.48	123.47	123.47	278.54	278.54	
S5-1	W16x67	390.00	390.00	417.48	123.47	123.47	278.54	278.54	
S6-1	W16x67	390.00	348.45	348.45	123.47	228.95	228.95	216.57	
S7-1	W16x67	390.00	281.49	283.65	123.47	210.39	206.78	205.75	
F2-1	Plate	804.45	804.45	859.57	98.85	234.41	246.65	246.65	
F1-2	Plate	951.81	996.22	951.81	167.98	167.98	173.81	180.06	
S1-2	W16x67	390.00	390.00	390.00	123.47	123.47	123.47	123.47	
S2-2	W16x67	390.00	390.00	390.00	123.47	123.47	123.47	123.47	
S3-2	W16x67	390.00	348.45	348.45	228.95	228.95	228.95	228.95	
S4-2	W16x67	390.00	321.81	299.58	228.95	221.73	215.54	214.51	
S5-2	W16x67	390.00	321.81	299.58	228.95	221.73	215.54	218.64	



Made By: CTG Date: 4/9/2012 Job No.: \_\_\_\_\_  
 Checked By: DMP Date: 4/13/2012 Sheet No.: \_\_\_\_\_

**Stringers Capacity - As Built**

Stringers	Shape	MEMBER CAPACITY							
		MOMENT (kip-ft)			SHEAR (kips)				
		Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Vu 1 <sup>st</sup> Support	Vu 2 <sup>nd</sup> Support	Vu 3 <sup>rd</sup> Support	Vu 4 <sup>th</sup> Support	
SECTION H	S6-2	W16x67	390.00	325.56	314.34	228.95	222.76	219.67	221.73
	S7-2	W16x67	390.00	251.67	248.25	205.75	201.63	200.59	204.72
	F2-2	Plate	859.57	859.57	859.57	207.62	207.62	207.62	207.62
	F1-3	Plate	1031.98	1031.98	---	185.68	185.68	190.34	---
	S1-3	W16x67	390.00	390.00	---	123.47	123.47	227.91	---
	S2-3	W16x67	390.00	390.00	---	123.47	123.47	227.91	---
	S3-3	W16x67	390.00	338.85	---	231.52	226.37	224.82	---
	S4-3	W16x67	390.00	281.49	---	214.51	210.39	209.87	---
	S5-3	W16x67	390.00	303.24	---	218.64	216.57	216.57	---
	S6-3	W16x67	390.00	321.81	---	221.73	221.73	218.64	---
	S7-3	W16x67	390.00	265.56	---	204.72	205.75	209.87	---
	F2-3	Plate	859.57	859.57	---	207.62	207.62	207.62	---
	F1-4	Plate	1014.07	1014.07	1014.07	192.84	192.84	192.84	192.84
	S1-4	W16x67	390.00	348.45	327.45	227.91	228.95	223.28	210.39
	S2-4	W16x67	390.00	344.61	348.45	227.91	227.91	228.95	216.57
	S3-4	W16x67	390.00	314.34	303.24	224.82	219.67	216.57	213.48
	S4-4	W16x67	390.00	269.07	265.56	209.87	206.78	205.75	206.26
	S5-4	W16x67	390.00	295.95	295.95	216.57	214.51	214.51	212.45
	S6-4	W16x67	390.00	325.56	327.45	218.64	222.76	223.28	214.51
	S7-4	W16x67	390.00	281.49	292.32	209.87	210.39	213.48	206.26
F2-4	Plate	859.57	859.57	859.57	207.62	207.62	207.62	207.62	



Made By DWC  
Checked By CTG

Date 6/20/2012  
Date 6/20/2012

Job No. P402110046

Calculations For **CUY-2-1441**

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### Revisions to Stringer Analysis

- ◆ Isolated continuous stringers have copes over intermediate supports. Because the stringers are not full depth in these locations, the full negative moment cannot develop.
- ◆ Per discussion with ODOT May 29, 2012, any continuous stringer that is coped over intermediate supports should be re-analyzed as simply supported.
- ◆ Calculations for the revised stringers are included on the following page(s) and have replaced the previous rating calculations. It was determined that moment would govern for the ratings.

Lakefront Trestle - Stringer Ratings



Made By: CTG  
Checked By: DWC

Date: 5/31/2012  
Date: 6/7/2012

Job No.: p402110046

Stringer Ratings - As Built (coped stringers are simple span)

Stringers	Shape	Impact	RATING SUMMARY										
			SERVICE MOMENT (kip-ft)						RATING FACTOR - HS20				
			DEAD LOAD			LIVE LOAD			M+		M-		
			Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Inv.	Opr.	Inv.	Opr.	
SECTION A	F1-1	Plate	1.3	156.25	---	---	213.24	18.36	---	1.45	2.43	---	---
	S1-1	W21x73	1.3	63.23	36.06	---	149.03	75.21	---	1.03	1.72	2.21	3.69
	S2-1	W21x73	1.3	66.34	30.80	---	160.42	91.66	---	<b>0.95</b>	1.59	1.84	3.07
	S3-1	W21x73	1.3	69.33	26.13	---	166.28	80.09	---	<b>0.91</b>	1.52	2.13	3.56
	S4-1	W21x73	1.3	70.10	24.59	---	168.70	75.98	---	<b>0.89</b>	1.49	2.26	3.77
	S5-1	W21x73	1.3	68.52	27.75	---	164.92	82.24	---	<b>0.92</b>	1.53	2.07	3.45
	S6-1	W21x73	1.3	64.44	34.60	---	159.56	93.84	---	<b>0.96</b>	1.60	1.78	2.97
	S7-1	W21x73	1.3	61.42	46.58	---	142.39	74.82	---	1.09	1.81	2.16	3.60
	F2-1	Plate	1.3	145.12	---	---	224.99	17.99	---	1.69	2.83	---	---
	F1-2	Plate	1.3	36.48	180.35	---	121.44	136.68	---	2.93	4.90	2.12	3.54
	S1-2	W21x73	1.3	38.98	99.68	---	144.63	112.12	---	1.14	1.90	1.22	2.04
	S2-2	W21x73	1.3	38.66	101.88	---	160.62	122.91	---	1.03	1.72	1.11	1.85
	S3-2	W21x73	1.3	39.31	100.93	---	164.01	109.81	---	1.00	1.68	1.24	2.07
	S4-2	W21x73	1.3	39.61	100.02	---	165.19	104.71	---	<b>1.00</b>	1.66	1.31	2.18
	S5-2	W21x73	1.3	39.48	100.41	---	163.16	112.91	---	1.01	1.69	1.21	2.02
	S6-2	W21x73	1.3	38.97	100.92	---	159.69	125.62	---	1.03	1.73	1.09	1.81
	S7-2	W21x73	1.3	41.26	102.01	---	138.96	108.93	---	1.18	1.97	1.25	2.08
	F2-2	Plate	1.3	13.38	168.33	---	107.40	156.08	---	4.12	6.88	2.38	3.97
	F1-3	Plate	1.3	102.90	---	---	121.01	---	---	2.61	4.36	---	---
	S1-3	W24x84	1.3	79.47	---	---	168.48	---	---	1.20	2.00	---	---
	S2-3	W24x84	1.3	80.94	---	---	188.36	---	---	1.07	1.78	---	---
	S3-3	W24x84	1.3	82.54	---	---	190.28	---	---	1.05	1.76	---	---
	S4-3	W24x94	1.3	84.59	---	---	192.22	---	---	1.20	2.01	---	---
	S5-3	W24x94	1.3	85.57	---	---	194.02	---	---	1.19	1.99	---	---
S6-3	W24x94	1.3	85.89	---	---	196.37	---	---	1.17	1.96	---	---	
S7-3	W24x94	1.3	89.96	---	---	190.16	---	---	1.20	2.01	---	---	
F2-3	Plate	1.3	76.47	---	---	115.57	---	---	3.29	5.50	---	---	

Lakefront Trestle - Stringer Ratings



Made By: CTG  
Checked By: DWC

Date: 5/31/2012  
Date: 6/7/2012

Job No.: p402110046

Stringer Ratings - As Built (coped stringers are simple span)

Stringers	Shape	Impact	RATING SUMMARY										
			SERVICE MOMENT (kip-ft)						RATING FACTOR - HS20				
			DEAD LOAD			LIVE LOAD			M+		M-		
			Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Inv.	Opr.	Inv.	Opr.	
SECTION B	F1-4	Plate	1.3	102.87	---	---	123.96	---	---	2.46	4.11	---	---
	S1-4	W24x84	1.3	79.46	---	---	155.23	---	---	1.30	2.17	---	---
	S2-4	W24x84	1.3	80.94	---	---	182.65	---	---	1.10	1.84	---	---
	S3-4	W24x84	1.3	82.55	---	---	183.10	---	---	1.09	1.83	---	---
	S4-4	W24x94	1.3	84.59	---	---	183.55	---	---	1.26	2.10	---	---
	S5-4	W24x94	1.3	85.57	---	---	185.82	---	---	1.24	2.07	---	---
	S6-4	W24x94	1.3	85.90	---	---	188.26	---	---	1.22	2.04	---	---
	S7-4	W24x94	1.3	90.04	---	---	200.26	---	---	1.14	1.91	---	---
	F2-4	Plate	1.3	76.49	---	---	120.77	---	---	3.07	5.12	---	---
	F1A-5	Plate	1.3	107.31	---	---	127.03	---	---	2.64	4.41	---	---
	F1B-5	Plate	1.3	107.79	---	---	128.32	---	---	2.41	4.02	---	---
	S1-5	W18x76	1.3	81.50	---	---	167.32	---	---	<b>0.81</b>	1.36	---	---
	S2-5	W18x76	1.3	82.04	---	---	182.54	---	---	<b>0.74</b>	1.24	---	---
	S3-5	W18x76	1.3	57.55	50.27	---	150.38	80.41	---	<b>0.98</b>	1.63	1.87	3.12
	S4-5	W18x76	1.3	58.04	49.30	---	154.19	74.09	---	<b>0.95</b>	1.59	2.03	3.40
	S5-5	W18x76	1.3	57.51	50.39	---	151.66	84.32	---	<b>0.97</b>	1.62	1.78	2.97
	S6-5	W18x76	1.3	55.77	52.53	---	147.85	94.77	---	<b>1.00</b>	1.67	1.57	2.63
	S7-5	W18x76	1.3	55.77	58.64	---	155.22	90.26	---	<b>0.95</b>	1.59	1.62	2.71
	F2A-5	Plate	1.3	73.40	---	---	118.19	---	---	3.36	5.61	---	---
	F2B-5	Plate	1.3	73.21	---	---	111.87	---	---	3.39	5.65	---	---
	F1-6	Plate	1.3	90.14	---	---	110.47	---	---	2.42	4.04	---	---
	S1-6	W21x93	1.3	73.15	---	---	159.19	---	---	1.26	2.11	---	---
	S2-6	W21x93	1.3	76.77	---	---	179.66	---	---	1.11	1.86	---	---
	S3-6	W21x93	1.3	80.63	---	---	184.92	---	---	1.07	1.79	---	---
	S4-6	W21x93	1.3	83.94	---	---	190.68	---	---	1.03	1.72	---	---
	S5-6	W21x101	1.3	88.25	---	---	197.68	---	---	1.16	1.93	---	---
	S6-6	W21x101	1.3	91.05	---	---	204.25	---	---	1.11	1.86	---	---
	S7-6	W21x101	1.3	97.94	---	---	205.95	---	---	1.09	1.82	---	---
F2-6	Plate	1.3	84.13	---	---	125.72	---	---	2.80	4.67	---	---	

Lakefront Trestle - Stringer Ratings



Made By: CTG  
Checked By: DWC

Date: 5/31/2012  
Date: 6/7/2012

Job No.: p402110046

Stringer Ratings - As Built (coped stringers are simple span)

Stringers	Shape	Impact	RATING SUMMARY										
			SERVICE MOMENT (kip-ft)						RATING FACTOR - HS20				
			DEAD LOAD			LIVE LOAD			M+		M-		
			Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Inv.	Opr.	Inv.	Opr.	
F1-7	Plate	1.3	64.19	---	---	87.12	---	---	3.80	6.35	---	---	
S1-7	W21x73	1.3	50.49	---	---	117.99	---	---	1.35	2.26	---	---	
S2-7	W21x73	1.3	53.43	---	---	134.14	---	---	1.18	1.97	---	---	
S3-7	W21x73	1.3	56.64	---	---	136.33	---	---	1.15	1.92	---	---	
S4-7	W21x83	1.3	60.11	---	---	140.82	---	---	1.28	2.14	---	---	
S5-7	W21x83	1.3	62.94	---	---	145.21	---	---	1.24	2.06	---	---	
S6-7	W21x83	1.3	65.27	---	---	153.44	---	---	1.16	1.94	---	---	
S7-7	W21x83	1.3	70.72	---	---	163.47	---	---	1.08	1.80	---	---	
F2-7	Plate	1.3	62.29	---	---	99.08	---	---	3.33	5.56	---	---	
F1A-8	Plate	1.3	76.65	---	---	95.34	---	---	3.26	5.45	---	---	
F1B-8	Plate	1.3	76.29	---	---	95.42	---	---	3.11	5.19	---	---	
F1C-8	Plate	1.3	88.15	---	---	107.33	---	---	2.58	4.31	---	---	
S1-8	W18x86	1.3	67.73	---	---	110.09	---	---	1.51	2.53	---	---	
S2-8	W18x97	1.3	69.30	---	---	129.98	---	---	1.48	2.47	---	---	
S3-8	W18x86	1.3	68.95	---	---	131.05	---	---	1.27	2.12	---	---	
S4-8	W18x86	1.3	68.94	---	---	129.93	---	---	1.28	2.13	---	---	
S5-8	W18x86	1.3	68.95	---	---	130.09	---	---	1.28	2.13	---	---	
S6-8	W18x86	1.3	68.35	---	---	130.31	---	---	1.28	2.13	---	---	
S7-8	W18x86	1.3	71.00	---	---	164.81	---	---	1.00	1.67	---	---	
F2A-8	Plate	1.3	51.57	---	---	88.18	---	---	3.59	6.00	---	---	
F2B-8	Plate	1.3	51.45	---	---	100.49	---	---	3.59	5.99	---	---	
F2C-8	Plate	1.3	59.44	---	---	119.84	---	---	2.87	4.79	---	---	
F1A-9	Plate	1.3	88.08	---	---	106.26	---	---	2.48	4.14	---	---	
F1B-9	Plate	1.3	89.16	---	---	108.99	---	---	2.10	3.51	---	---	
F1C-9	Plate	1.3	76.34	---	---	94.91	---	---	2.48	4.13	---	---	
S1-9	W18x97	1.3	69.64	---	---	132.98	---	---	1.45	2.41	---	---	
S2-9	W18x97	1.3	70.19	---	---	140.46	---	---	1.37	2.28	---	---	
S3-9	W18x97	1.3	70.79	---	---	142.63	---	---	1.34	2.25	---	---	
S4-9	W18x97	1.3	70.79	---	---	140.28	---	---	1.37	2.28	---	---	
S5-9	W18x86	1.3	69.82	---	---	142.51	---	---	1.16	1.94	---	---	
S6-9	W18x97	1.3	70.19	---	---	140.11	---	---	1.37	2.29	---	---	
S7-9	W18x97	1.3	72.79	---	---	167.09	---	---	1.14	1.91	---	---	
F2A-9	Plate	1.3	59.33	---	---	118.12	---	---	2.79	4.67	---	---	
F2B-9	Plate	1.3	60.07	---	---	109.80	---	---	2.94	4.91	---	---	
F2C-9	Plate	1.3	51.21	---	---	84.04	---	---	3.81	6.36	---	---	
F1-10	Plate	1.3	63.62	---	---	95.46	---	---	2.77	4.62	---	---	
S1-10	W21x73	1.3	50.73	---	---	120.45	---	---	1.32	2.21	---	---	
S2-10	W21x73	1.3	53.56	---	---	125.32	---	---	1.26	2.11	---	---	
S3-10	W21x73	1.3	56.74	---	---	129.09	---	---	1.21	2.03	---	---	
S4-10	W21x83	1.3	60.18	---	---	133.98	---	---	1.35	2.25	---	---	
S5-10	W21x83	1.3	63.00	---	---	140.08	---	---	1.28	2.14	---	---	
S6-10	W21x83	1.3	65.30	---	---	147.58	---	---	1.21	2.02	---	---	
S7-10	W21x83	1.3	70.58	---	---	116.00	---	---	1.52	2.53	---	---	
F2-10	Plate	1.3	61.02	---	---	93.69	---	---	3.30	5.51	---	---	
F1-11	Plate	1.3	76.21	---	---	110.98	---	---	2.84	4.74	---	---	

SECTION C

Lakefront Trestle - Stringer Ratings



Made By: CTG  
Checked By: DWC

Date: 5/31/2012  
Date: 6/7/2012

Job No.: p402110046

Stringer Ratings - As Built (coped stringers are simple span)

Stringers	Shape	Impact	RATING SUMMARY										
			SERVICE MOMENT (kip-ft)						RATING FACTOR - HS20				
			DEAD LOAD			LIVE LOAD			M+		M-		
			Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Inv.	Opr.	Inv.	Opr.	
SECTION D	S1-11	W18x86	1.3	51.09	---	---	123.02	---	---	1.42	2.37	---	---
	S2-11	W18x86	1.3	45.86	---	---	113.13	---	---	1.56	2.61	---	---
	S3-11	W18x86	1.3	40.69	---	---	106.89	---	---	1.68	2.80	---	---
	S4-11	W18x65	1.3	34.86	---	---	99.36	---	---	1.26	2.11	---	---
	S5-11	W18x65	1.3	30.43	---	---	92.96	---	---	1.37	2.29	---	---
	S6-11	W18x65	1.3	26.30	---	---	85.53	---	---	1.51	2.53	---	---
	S7-11	W18x65	1.3	23.33	---	---	49.20	---	---	2.66	4.44	---	---
	F2-11	Plate	1.3	18.23	---	---	47.06	---	---	6.98	11.66	---	---
	F1A-12	Plate	1.3	93.89	---	---	135.90	---	---	2.32	3.87	---	---
	F1B-12	Plate	1.3	95.35	---	---	135.76	---	---	2.40	4.01	---	---
	S1-12	W21x101	1.3	75.11	---	---	162.84	---	---	1.44	2.40	---	---
	S2-12	W21x101	1.3	75.42	---	---	160.98	---	---	1.46	2.43	---	---
	S3-12	W21x101	1.3	76.05	---	---	163.05	---	---	1.44	2.40	---	---
	S4-12	W21x101	1.3	76.05	---	---	159.91	---	---	1.46	2.44	---	---
	S5-12	W21x101	1.3	76.05	---	---	160.83	---	---	1.45	2.43	---	---
	S6-12	W21x101	1.3	75.42	---	---	162.26	---	---	1.44	2.41	---	---
	S7-12	W21x101	1.3	77.90	---	---	108.12	---	---	2.16	3.60	---	---
	F2A-12	Plate	1.3	62.68	---	---	91.50	---	---	3.37	5.62	---	---
	F2B-12	Plate	1.3	63.51	---	---	94.33	---	---	3.27	5.46	---	---
	F1-13	Plate	1.3	11.71	---	---	40.38	---	---	9.31	15.54	---	---
	S1-13	W18x55	1.3	13.77	---	---	57.13	---	---	1.97	3.30	---	---
	S2-13	W18x55	1.3	19.52	---	---	70.67	---	---	1.56	2.60	---	---
	S3-13	W18x55	1.3	26.17	---	---	83.89	---	---	1.28	2.13	---	---
	S4-13	W18x71	1.3	34.50	---	---	94.81	---	---	1.47	2.45	---	---
	S5-13	W18x71	1.3	43.28	---	---	109.39	---	---	1.24	2.07	---	---
	S6-13	W18x86	1.3	54.11	---	---	122.25	---	---	1.41	2.36	---	---
	S7-13	W18x86	1.3	67.50	---	---	110.64	---	---	1.51	2.52	---	---
	F2-13	Plate	1.3	62.79	---	---	96.21	---	---	3.14	5.24	---	---



Lakefront Trestle - Stringer Ratings



Made By: CTG  
Checked By: DWC

Date: 5/31/2012  
Date: 6/7/2012

Job No.: p402110046

Stringer Ratings - As Built (coped stringers are simple span)

Stringers	Shape	Impact	RATING SUMMARY										
			SERVICE MOMENT (kip-ft)						RATING FACTOR - HS20				
			DEAD LOAD			LIVE LOAD			M+		M-		
			Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Inv.	Opr.	Inv.	Opr.	
SECTION E	F1-14	Plate	1.3	124.43	---	---	152.78	---	---	2.54	4.24	---	---
	S1-14	W24x94	1.3	96.55	---	---	198.28	---	---	1.14	1.90	---	---
	S2-14	W24x94	1.3	99.79	---	---	217.83	---	---	1.03	1.72	---	---
	S3-14	W24x94	1.3	103.29	---	---	224.30	---	---	<b>0.99</b>	1.66	---	---
	S4-14	W24x104	1.3	107.46	---	---	229.89	---	---	1.12	1.87	---	---
	S5-14	W24x104	1.3	110.37	---	---	235.37	---	---	1.09	1.82	---	---
	S6-14	W24x104	1.3	112.58	---	---	240.12	---	---	1.06	1.78	---	---
	S7-14	W24x104	1.3	119.63	---	---	216.53	---	---	1.16	1.95	---	---
	F2-14	Plate	1.3	99.99	---	---	145.19	---	---	2.14	3.58	---	---
	F1A-15	Plate	1.3	139.47	---	---	152.56	---	---	2.68	4.47	---	---
	F1B-15	Plate	1.3	139.41	---	---	155.12	---	---	2.82	4.70	---	---
	F1C-15	Plate	1.3	139.78	---	---	154.91	---	---	3.00	5.01	---	---
	S1-15	W21x111	1.3	107.38	---	---	184.29	---	---	1.34	2.24	---	---
	S2-15	W21x111	1.3	108.08	---	---	213.54	---	---	1.16	1.93	---	---
	S3-15	W21x101	1.3	107.49	---	---	213.69	---	---	1.03	1.72	---	---
	S4-15	W21x101	1.3	107.49	---	---	213.13	---	---	1.03	1.72	---	---
	S5-15	W21x101	1.3	107.48	---	---	213.51	---	---	1.03	1.72	---	---
	S6-15	W21x101	1.3	106.75	---	---	213.29	---	---	1.03	1.72	---	---
	S7-15	W21x101	1.3	110.68	---	---	232.29	---	---	<b>0.94</b>	1.57	---	---
	F2A-15	Plate	1.3	91.03	---	---	145.40	---	---	2.31	3.86	---	---
	F2B-15	Plate	1.3	91.23	---	---	157.04	---	---	1.90	3.17	---	---
	F2C-15	Plate	1.3	91.51	---	---	152.06	---	---	2.07	3.46	---	---
	F1-16	Plate	1.3	124.05	---	---	140.88	---	---	3.71	6.20	---	---
	S1-16	W24x94	1.3	95.23	---	---	153.00	---	---	1.48	2.47	---	---
	S2-16	W24x94	1.3	98.99	---	---	193.30	---	---	1.16	1.94	---	---
	S3-16	W24x94	1.3	102.83	---	---	198.63	---	---	1.12	1.87	---	---
	S4-16	W24x104	1.3	107.33	---	---	203.98	---	---	1.26	2.11	---	---
	S5-16	W24x104	1.3	110.60	---	---	207.68	---	---	1.23	2.06	---	---
	S6-16	W24x104	1.3	113.18	---	---	212.91	---	---	1.20	2.00	---	---
	S7-16	W24x104	1.3	120.78	---	---	240.77	---	---	1.05	1.75	---	---
	F2-16	Plate	1.3	103.24	---	---	166.21	---	---	2.16	3.61	---	---

Lakefront Trestle - Stringer Ratings



Made By: CTG  
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Date: 5/31/2012  
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Job No.: p402110046

Stringer Ratings - As Built (coped stringers are simple span)

Stringers	Shape	Impact	RATING SUMMARY										
			SERVICE MOMENT (kip-ft)						RATING FACTOR - HS20				
			DEAD LOAD			LIVE LOAD			M+		M-		
			Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Inv.	Opr.	Inv.	Opr.	
SECTION F	F1-17	Plate	1.3	142.45	---	---	154.40	---	---	3.08	5.14	---	---
	S1-17	W24x104	1.3	111.70	---	---	172.65	---	---	1.48	2.47	---	---
	S2-17	W24x104	1.3	115.81	---	---	216.89	---	---	1.17	1.96	---	---
	S3-17	W24x104	1.3	119.98	---	---	223.01	---	---	1.13	1.89	---	---
	S4-17	W24x104	1.3	123.44	---	---	227.28	---	---	1.10	1.84	---	---
	S5-17	W24x117	1.3	128.99	---	---	232.35	---	---	1.24	2.07	---	---
	S6-17	W24x117	1.3	131.79	---	---	238.14	---	---	1.21	2.01	---	---
	S7-17	W24x117	1.3	140.27	---	---	274.48	---	---	1.03	1.72	---	---
	F2-17	Plate	1.3	118.36	---	---	180.69	---	---	2.11	3.53	---	---
	F1A-18	Plate	1.3	160.79	---	---	170.77	---	---	2.88	4.81	---	---
	F1B-18	Plate	1.3	161.59	---	---	169.54	---	---	3.28	5.49	---	---
	S1-18	W21x101	1.3	87.21	69.58	---	156.73	70.96	---	1.46	2.44	3.34	5.58
	S2-18	W21x101	1.3	89.35	66.96	---	182.28	99.55	---	1.25	2.09	2.39	4.00
	S3-18	W21x101	1.3	91.15	64.97	---	184.33	91.41	---	1.23	2.06	2.62	4.37
	S4-18	W21x101	1.3	91.38	64.46	---	186.39	88.13	---	1.22	2.03	2.72	4.54
	S5-18	W21x101	1.3	90.43	66.39	---	182.65	94.98	---	1.24	2.08	2.51	4.19
	S6-18	W21x101	1.3	88.07	69.54	---	181.58	100.42	---	1.26	2.10	2.36	3.94
	S7-18	W21x101	1.3	88.31	77.97	---	207.85	104.14	---	1.10	1.83	2.24	3.74
	F2A-18	Plate	1.3	106.16	---	---	170.70	---	---	2.14	3.58	---	---
	F2B-18	Plate	1.3	106.21	---	---	165.25	---	---	2.23	3.72	---	---
	F1-19	Plate	1.3	159.00	---	---	166.17	---	---	3.56	5.95	---	---
	S1-19	W24x104	1.3	120.70	---	---	223.85	---	---	1.12	1.88	---	---
	S2-19	W24x104	1.3	122.04	---	---	247.51	---	---	1.01	1.69	---	---
	S3-19	W24x104	1.3	122.04	---	---	136.72	---	---	1.84	3.07	---	---
	S4-19	W24x104	1.3	124.04	---	---	250.09	---	---	1.00	1.67	---	---
	S5-19	W24x104	1.3	124.65	---	---	251.52	---	---	<b>0.99</b>	1.66	---	---
	S6-19	W24x104	1.3	124.46	---	---	252.89	---	---	<b>0.99</b>	1.65	---	---
	S7-19	W24x104	1.3	129.51	---	---	248.14	---	---	<b>1.00</b>	1.67	---	---
F2-19	Plate	1.3	107.24	---	---	151.99	---	---	2.05	3.43	---	---	

Lakefront Trestle - Stringer Ratings



Made By: CTG  
Checked By: DWC

Date: 5/31/2012  
Date: 6/7/2012

Job No.: p402110046

Stringer Ratings - As Built (coped stringers are simple span)

Stringers	Shape	Impact	RATING SUMMARY										
			SERVICE MOMENT (kip-ft)						RATING FACTOR - HS20				
			DEAD LOAD			LIVE LOAD			M+		M-		
			Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Inv.	Opr.	Inv.	Opr.	
SECTION G	F1-20	Plate	1.3	116.46	---	---	135.65	---	---	3.10	5.17	---	---
	S1-20	W21x101	1.3	90.48	---	---	180.80	---	---	1.26	2.10	---	---
	S2-20	W21x101	1.3	91.52	---	---	198.51	---	---	1.14	1.91	---	---
	S3-20	W21x101	1.3	92.73	---	---	199.35	---	---	1.14	1.90	---	---
	S4-20	W21x101	1.3	93.26	---	---	200.38	---	---	1.13	1.88	---	---
	S5-20	W21x101	1.3	93.78	---	---	201.68	---	---	1.12	1.87	---	---
	S6-20	W21x101	1.3	93.62	---	---	203.00	---	---	1.11	1.86	---	---
	S7-20	W21x101	1.3	97.45	---	---	182.69	---	---	1.23	2.05	---	---
	F2-20	Plate	1.3	80.53	---	---	123.41	---	---	2.81	4.69	---	---
	F1-21	Plate	1.3	190.72	---	---	229.50	64.50	---	1.71	2.86	---	---
	S1-21	W18x86	1.3	66.91	46.75	---	146.28	94.04	---	1.14	1.91	1.87	3.13
	S2-21	W18x86	1.3	65.78	50.06	---	155.97	106.95	---	1.07	1.79	1.63	2.73
	S3-21	W18x86	1.3	62.83	57.33	---	155.73	99.80	---	1.08	1.81	1.72	2.87
	S4-21	W18x86	1.3	57.40	68.19	---	154.06	100.71	---	1.11	1.86	1.65	2.76
	S5-21	W18x86	1.3	50.53	81.92	---	150.20	113.23	---	1.16	1.94	1.41	2.36
	S6-21	W18x86	1.3	43.00	95.63	---	146.06	129.11	---	1.22	2.04	1.19	1.99
	S7-21	W18x86	1.3	94.05	---	---	176.16	---	---	<b>0.88</b>	1.46	---	---
	F2-21	Plate	1.3	0.00	195.60	---	90.85	81.16	---	4.08	6.82	3.46	5.78
	F1-22	Plate	1.3	12.74	131.70	---	195.91	101.60	---	2.35	3.93	4.00	6.68
	S1-22	W16x77	1.3	28.69	60.69	---	104.71	79.58	---	1.40	2.33	1.65	2.76
	S2-22	W16x77	1.3	31.91	54.98	---	110.03	84.58	---	1.32	2.20	1.59	2.65
	S3-22	W16x77	1.3	36.50	46.95	---	116.75	69.55	---	1.22	2.04	1.98	3.31
S4-22	W16x77	1.3	39.92	40.10	---	119.43	63.07	---	1.18	1.97	2.24	3.73	
S5-22	W16x77	1.3	41.91	36.15	---	115.52	71.50	---	1.21	2.03	2.00	3.34	
S6-22	W16x77	1.3	42.17	34.28	---	109.78	83.60	---	1.28	2.13	1.72	2.87	
S7-22	W16x77	1.3	61.42	---	---	124.05	---	---	1.06	1.77	---	---	
F2-22	Plate	1.3	76.61	---	---	114.64	13.95	---	2.30	3.84	---	---	

Lakefront Trestle - Stringer Ratings



Made By: CTG  
Checked By: DWC

Date: 5/31/2012  
Date: 6/7/2012

Job No.: p402110046

Stringer Ratings - As Built (coped stringers are simple span)

Stringers	Shape	Impact	RATING SUMMARY										
			SERVICE MOMENT (kip-ft)						RATING FACTOR - HS20				
			DEAD LOAD			LIVE LOAD			M+		M-		
			Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Inv.	Opr.	Inv.	Opr.	
F1-1	Plate	1.3	63.20	---	98.28	219.50	78.38	103.31	1.57	2.61	3.17	5.29	
S1-1	W16x67	1.3	33.38	28.34	50.15	90.47	64.52	69.72	1.36	2.27	1.65	2.76	
S2-1	W16x67	1.3	34.51	26.17	58.87	95.47	68.57	76.37	1.28	2.14	1.46	2.43	
S3-1	W16x67	1.3	34.51	26.17	63.62	101.14	54.83	67.68	1.21	2.02	1.61	2.69	
S4-1	W16x67	1.3	43.49	44.47	---	112.01	55.28	---	1.06	1.76	2.13	3.56	
S5-1	W16x67	1.3	43.50	51.24	---	112.02	66.63	---	1.06	1.76	1.72	2.87	
S6-1	W16x67	1.3	46.66	---	---	117.78	---	---	0.99	1.66	---	---	
S7-1	W16x67	1.3	48.43	---	---	106.88	---	---	1.08	1.81	---	---	
F2-1	Plate	1.3	5.33	137.09	96.06	85.99	64.36	61.15	3.29	5.49	3.45	5.76	
F1-2	Plate	1.3	89.87	58.61	---	157.39	61.84	33.33	1.88	3.14	5.27	8.81	
S1-2	W16x67	1.3	39.45	39.00	7.75	91.18	66.20	60.79	1.32	2.20	1.82	3.03	
S2-2	W16x67	1.3	43.78	40.96	---	95.41	74.00	66.96	1.24	2.07	1.61	2.69	
S3-2	W16x67	1.3	43.49	---	---	116.13	---	---	1.02	1.70	---	---	
S4-2	W16x67	1.3	43.49	---	---	116.13	---	---	1.02	1.70	---	---	
S5-2	W16x67	1.3	43.49	---	---	116.14	---	---	1.02	1.70	---	---	
S6-2	W16x67	1.3	43.49	---	---	116.15	---	---	1.02	1.70	---	---	
S7-2	W16x67	1.3	45.15	---	---	99.71	---	---	1.18	1.97	---	---	
F2-2	Plate	1.3	105.44	---	---	116.97	4.68	5.72	2.19	3.66	---	---	
F1-3	Plate	1.3	110.86	---	---	123.88	8.88	---	2.54	4.24	---	---	
S1-3	W16x67	1.3	33.25	13.24	---	85.76	64.51	---	1.43	2.39	2.05	3.42	
S2-3	W16x67	1.3	33.04	14.22	---	90.93	71.88	---	1.35	2.26	1.83	3.06	
S3-3	W16x67	1.3	40.02	---	---	109.41	---	---	1.10	1.83	---	---	
S4-3	W16x67	1.3	40.04	---	---	109.48	---	---	1.09	1.83	---	---	
S5-3	W16x67	1.3	40.04	---	---	109.45	---	---	1.09	1.83	---	---	
S6-3	W16x67	1.3	40.04	---	---	109.47	---	---	1.09	1.83	---	---	
S7-3	W16x67	1.3	41.55	---	---	94.51	---	---	1.26	2.10	---	---	
F2-3	Plate	1.3	9.58	67.49	---	83.27	36.13	---	3.61	6.02	7.57	12.65	
F1-4	Plate	1.3	7.65	146.84	160.68	116.45	80.13	78.24	3.06	5.10	3.64	6.08	
S1-4	W16x67	1.3	46.42	---	---	109.95	---	---	1.06	1.77	---	---	
S2-4	W16x67	1.3	46.69	---	---	118.50	---	---	0.99	1.65	---	---	
S3-4	W16x67	1.3	46.65	---	---	118.42	---	---	0.99	1.65	---	---	
S4-4	W16x67	1.3	46.69	---	---	118.50	---	---	0.99	1.65	---	---	
S5-4	W16x67	1.3	46.66	---	---	118.46	---	---	0.99	1.65	---	---	
S6-4	W16x67	1.3	46.66	---	---	118.42	---	---	0.99	1.65	---	---	
S7-4	W16x67	1.3	48.45	---	---	103.34	---	---	1.12	1.87	---	---	
F2-4	Plate	1.3	41.79	62.17	62.28	119.85	56.45	37.81	2.38	3.98	4.89	8.17	

SECTION H

Lakefront Trestle - Stringer Ratings



Made By: CTG  
 Checked By: DWC

Date: 5/31/2012 Job No.: p402110046  
 Date: 6/7/2012

Stringer Ratings - As Built (coped stringers are simple span)

Stringers	Shape	Impact	RATING SUMMARY								
			SERVICE MOMENT (kip-ft)						RATING FACTOR - 2F1		
			DEAD LOAD			LIVE LOAD			M+	M-	
			Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Opr.	Opr.	
SECTION A	F1-1	Plate	1.3	156.25	---	---	115.16	8.93	---	4.49	---
	S1-1	W21x73	1.3	63.23	36.06	---	95.63	38.92	---	2.68	7.13
	S2-1	W21x73	1.3	66.34	30.80	---	104.17	45.81	---	2.44	6.15
	S3-1	W21x73	1.3	69.33	26.13	---	105.55	41.68	---	2.39	6.84
	S4-1	W21x73	1.3	70.10	24.59	---	106.11	40.03	---	2.37	7.15
	S5-1	W21x73	1.3	68.52	27.75	---	105.25	42.60	---	2.40	6.67
	S6-1	W21x73	1.3	64.44	34.60	---	104.02	46.36	---	2.46	6.01
	S7-1	W21x73	1.3	61.42	46.58	---	91.16	37.91	---	2.83	7.11
	F2-1	Plate	1.3	145.12	---	---	118.10	8.54	---	5.39	---
	F1-2	Plate	1.3	36.48	180.35	---	72.69	65.82	---	8.18	7.35
	S1-2	W21x73	1.3	38.98	99.68	---	94.82	52.97	---	2.90	4.32
	S2-2	W21x73	1.3	38.66	101.88	---	105.10	57.22	---	2.62	3.97
	S3-2	W21x73	1.3	39.31	100.93	---	106.81	53.72	---	2.58	4.24
	S4-2	W21x73	1.3	39.61	100.02	---	107.38	52.32	---	2.56	4.37
	S5-2	W21x73	1.3	39.48	100.41	---	106.39	54.70	---	2.58	4.17
	S6-2	W21x73	1.3	38.97	100.92	---	104.65	58.25	---	2.63	3.91
	S7-2	W21x73	1.3	41.26	102.01	---	91.02	51.42	---	3.01	4.41
	F2-2	Plate	1.3	13.38	168.33	---	64.23	76.58	---	11.51	8.09
	F1-3	Plate	1.3	102.90	---	---	77.98	---	---	6.76	---
	S1-3	W24x84	1.3	79.47	---	---	108.01	---	---	3.12	---
	S2-3	W24x84	1.3	80.94	---	---	120.46	---	---	2.78	---
S3-3	W24x84	1.3	82.54	---	---	121.25	---	---	2.76	---	
S4-3	W24x94	1.3	84.59	---	---	122.03	---	---	3.16	---	
S5-3	W24x94	1.3	85.57	---	---	122.80	---	---	3.14	---	
S6-3	W24x94	1.3	85.89	---	---	123.57	---	---	3.11	---	
S7-3	W24x94	1.3	89.96	---	---	118.25	---	---	3.23	---	
F2-3	Plate	1.3	76.47	---	---	72.17	---	---	8.81	---	

Lakefront Trestle - Stringer Ratings



Made By: CTG  
 Checked By: DWC

Date: 5/31/2012 Job No.: p402110046  
 Date: 6/7/2012

Stringer Ratings - As Built (coped stringers are simple span)

Stringers	Shape	Impact	RATING SUMMARY								
			SERVICE MOMENT (kip-ft)						RATING FACTOR - 2F1		
			DEAD LOAD			LIVE LOAD			M+	M-	
			Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Opr.	Opr.	
SECTION B	F1-4	Plate	1.3	102.87	---	---	78.88	---	---	6.45	---
	S1-4	W24x84	1.3	79.46	---	---	98.18	---	---	3.43	---
	S2-4	W24x84	1.3	80.94	---	---	116.31	---	---	2.88	---
	S3-4	W24x84	1.3	82.55	---	---	114.49	---	---	2.92	---
	S4-4	W24x94	1.3	84.59	---	---	113.22	---	---	3.41	---
	S5-4	W24x94	1.3	85.57	---	---	114.75	---	---	3.36	---
	S6-4	W24x94	1.3	85.90	---	---	116.29	---	---	3.31	---
	S7-4	W24x94	1.3	90.04	---	---	123.70	---	---	3.09	---
	F2-4	Plate	1.3	76.49	---	---	73.60	---	---	8.40	---
	F1A-5	Plate	1.3	107.31	---	---	78.57	---	---	7.13	---
	F1B-5	Plate	1.3	107.79	---	---	80.52	---	---	6.41	---
	S1-5	W18x76	1.3	81.50	---	---	105.41	---	---	2.15	---
	S2-5	W18x76	1.3	82.04	---	---	117.10	---	---	1.93	---
	S3-5	W18x76	1.3	57.55	50.27	---	102.00	41.56	---	2.40	6.03
	S4-5	W18x76	1.3	58.04	49.30	---	101.70	39.46	---	2.41	6.37
	S5-5	W18x76	1.3	57.51	50.39	---	96.53	42.35	---	2.54	5.92
	S6-5	W18x76	1.3	55.77	52.53	---	95.87	45.06	---	2.57	5.52
	S7-5	W18x76	1.3	55.77	58.64	---	103.91	45.50	---	2.37	5.37
	F2A-5	Plate	1.3	73.40	---	---	75.33	---	---	8.79	---
	F2B-5	Plate	1.3	73.21	---	---	69.47	---	---	9.10	---
	F1-6	Plate	1.3	90.14	---	---	72.72	---	---	6.13	---
	S1-6	W21x93	1.3	73.15	---	---	102.44	---	---	3.28	---
	S2-6	W21x93	1.3	76.77	---	---	114.34	---	---	2.91	---
	S3-6	W21x93	1.3	80.63	---	---	115.23	---	---	2.87	---
S4-6	W21x93	1.3	83.94	---	---	117.96	---	---	2.78	---	
S5-6	W21x101	1.3	88.25	---	---	123.43	---	---	3.09	---	
S6-6	W21x101	1.3	91.05	---	---	128.15	---	---	2.96	---	
S7-6	W21x101	1.3	97.94	---	---	127.42	---	---	2.93	---	
F2-6	Plate	1.3	84.13	---	---	78.92	---	---	7.43	---	

Lakefront Trestle - Stringer Ratings



Made By: CTG  
Checked By: DWC

Date: 5/31/2012 Job No.: p402110046  
Date: 6/7/2012

Stringer Ratings - As Built (coped stringers are simple span)

Stringers	Shape	Impact	RATING SUMMARY								
			SERVICE MOMENT (kip-ft)						RATING FACTOR - 2F1		
			DEAD LOAD			LIVE LOAD			M+	M-	
			Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Opr.	Opr.	
SECTION C	F1-7	Plate	1.3	64.19	---	---	57.14	---	---	9.67	---
	S1-7	W21x73	1.3	50.49	---	---	78.64	---	---	3.39	---
	S2-7	W21x73	1.3	53.43	---	---	85.61	---	---	3.09	---
	S3-7	W21x73	1.3	56.64	---	---	92.54	---	---	2.83	---
	S4-7	W21x83	1.3	60.11	---	---	92.07	---	---	3.28	---
	S5-7	W21x83	1.3	62.94	---	---	96.65	---	---	3.10	---
	S6-7	W21x83	1.3	65.27	---	---	102.30	---	---	2.91	---
	S7-7	W21x83	1.3	70.72	---	---	103.31	---	---	2.84	---
	F2-7	Plate	1.3	62.29	---	---	62.85	---	---	8.76	---
	F1A-8	Plate	1.3	76.65	---	---	62.40	---	---	8.32	---
	F1B-8	Plate	1.3	76.29	---	---	62.35	---	---	7.95	---
	F1C-8	Plate	1.3	88.15	---	---	71.51	---	---	6.47	---
	S1-8	W18x86	1.3	67.73	---	---	77.65	---	---	3.58	---
	S2-8	W18x97	1.3	69.30	---	---	90.83	---	---	3.54	---
	S3-8	W18x86	1.3	68.95	---	---	92.06	---	---	3.01	---
	S4-8	W18x86	1.3	68.94	---	---	90.48	---	---	3.06	---
	S5-8	W18x86	1.3	68.95	---	---	91.71	---	---	3.02	---
	S6-8	W18x86	1.3	68.35	---	---	90.13	---	---	3.08	---
	S7-8	W18x86	1.3	71.00	---	---	107.67	---	---	2.56	---
	F2A-8	Plate	1.3	51.57	---	---	59.90	---	---	8.83	---
	F2B-8	Plate	1.3	51.45	---	---	67.07	---	---	8.97	---
	F2C-8	Plate	1.3	59.44	---	---	78.82	---	---	7.28	---
	F1A-9	Plate	1.3	88.08	---	---	68.59	---	---	6.41	---
	F1B-9	Plate	1.3	89.16	---	---	68.95	---	---	5.54	---
	F1C-9	Plate	1.3	76.34	---	---	63.10	---	---	6.21	---
	S1-9	W18x97	1.3	69.64	---	---	85.85	---	---	3.74	---
	S2-9	W18x97	1.3	70.19	---	---	96.98	---	---	3.31	---
	S3-9	W18x97	1.3	70.79	---	---	93.69	---	---	3.42	---
	S4-9	W18x97	1.3	70.79	---	---	96.53	---	---	3.32	---
	S5-9	W18x86	1.3	69.82	---	---	93.44	---	---	2.96	---
S6-9	W18x97	1.3	70.19	---	---	96.09	---	---	3.34	---	
S7-9	W18x97	1.3	72.79	---	---	111.12	---	---	2.87	---	
F2A-9	Plate	1.3	59.33	---	---	74.94	---	---	7.35	---	
F2B-9	Plate	1.3	60.07	---	---	71.40	---	---	7.54	---	
F2C-9	Plate	1.3	51.21	---	---	56.30	---	---	9.49	---	
F1-10	Plate	1.3	63.62	---	---	61.62	---	---	7.16	---	
S1-10	W21x73	1.3	50.73	---	---	80.15	---	---	3.32	---	
S2-10	W21x73	1.3	53.56	---	---	83.87	---	---	3.15	---	
S3-10	W21x73	1.3	56.74	---	---	84.95	---	---	3.08	---	
S4-10	W21x83	1.3	60.18	---	---	91.87	---	---	3.28	---	
S5-10	W21x83	1.3	63.00	---	---	90.63	---	---	3.30	---	
S6-10	W21x83	1.3	65.30	---	---	96.39	---	---	3.09	---	
S7-10	W21x83	1.3	70.58	---	---	74.82	---	---	3.92	---	
F2-10	Plate	1.3	61.02	---	---	59.73	---	---	8.63	---	



Lakefront Trestle - Stringer Ratings



Made By: C TG  
Checked By: DW C

Date: 5/31/2012 Job No.: p402110046  
Date: 6/7/2012

Stringer Ratings - As Built (coped stringers are simple span)

Stringers	Shape	Impact	RATING SUMMARY								
			SERVICE MOMENT (kip-ft)						RATING FACTOR - 2F1		
			DEAD LOAD			LIVE LOAD			M+	M-	
			Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Opr.	Opr.	
SECTION D	F1-11	Plate	1.3	76.21	---	---	75.99	---	---	6.91	---
	S1-11	W18x86	1.3	51.09	---	---	83.58	---	---	3.48	---
	S2-11	W18x86	1.3	45.86	---	---	74.77	---	---	3.94	---
	S3-11	W18x86	1.3	40.69	---	---	70.21	---	---	4.26	---
	S4-11	W18x65	1.3	34.86	---	---	63.40	---	---	3.30	---
	S5-11	W18x65	1.3	30.43	---	---	58.06	---	---	3.66	---
	S6-11	W18x65	1.3	26.30	---	---	53.97	---	---	4.00	---
	S7-11	W18x65	1.3	23.33	---	---	30.04	---	---	7.26	---
	F2-11	Plate	1.3	18.23	---	---	27.13	---	---	20.22	---
	F1A-12	Plate	1.3	93.89	---	---	83.08	---	---	6.33	---
	F1B-12	Plate	1.3	95.35	---	---	82.76	---	---	6.57	---
	S1-12	W21x101	1.3	75.11	---	---	106.52	---	---	3.67	---
	S2-12	W21x101	1.3	75.42	---	---	104.91	---	---	3.73	---
	S3-12	W21x101	1.3	76.05	---	---	105.47	---	---	3.70	---
	S4-12	W21x101	1.3	76.05	---	---	106.24	---	---	3.68	---
	S5-12	W21x101	1.3	76.05	---	---	105.48	---	---	3.70	---
	S6-12	W21x101	1.3	75.42	---	---	105.86	---	---	3.69	---
	S7-12	W21x101	1.3	77.90	---	---	71.23	---	---	5.46	---
	F2A-12	Plate	1.3	62.68	---	---	61.74	---	---	8.33	---
	F2B-12	Plate	1.3	63.51	---	---	62.06	---	---	8.29	---
	F1-13	Plate	1.3	11.71	---	---	24.44	---	---	25.66	---
	S1-13	W18x55	1.3	13.77	---	---	36.65	---	---	5.14	---
	S2-13	W18x55	1.3	19.52	---	---	42.72	---	---	4.30	---
	S3-13	W18x55	1.3	26.17	---	---	52.05	---	---	3.43	---
S4-13	W18x71	1.3	34.50	---	---	61.57	---	---	3.78	---	
S5-13	W18x71	1.3	43.28	---	---	71.55	---	---	3.16	---	
S6-13	W18x86	1.3	54.11	---	---	85.31	---	---	3.38	---	
S7-13	W18x86	1.3	67.50	---	---	73.51	---	---	3.79	---	
F2-13	Plate	1.3	62.79	---	---	65.34	---	---	7.71	---	

Lakefront Trestle - Stringer Ratings



Made By: CTG  
 Checked By: DWC

Date: 5/31/2012 Job No.: p402110046  
 Date: 6/7/2012

Stringer Ratings - As Built (coped stringers are simple span)

Stringers	Shape	Impact	RATING SUMMARY								
			SERVICE MOMENT (kip-ft)						RATING FACTOR - 2F1		
			DEAD LOAD			LIVE LOAD			M+	M-	
			Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Opr.	Opr.	
SECTION E	F1-14	Plate	1.3	124.43	---	---	95.54	---	---	6.78	---
	S1-14	W24x94	1.3	96.55	---	---	123.16	---	---	3.06	---
	S2-14	W24x94	1.3	99.79	---	---	130.48	---	---	2.87	---
	S3-14	W24x94	1.3	103.29	---	---	132.16	---	---	2.81	---
	S4-14	W24x104	1.3	107.46	---	---	135.41	---	---	3.18	---
	S5-14	W24x104	1.3	110.37	---	---	139.92	---	---	3.06	---
	S6-14	W24x104	1.3	112.58	---	---	143.31	---	---	2.98	---
	S7-14	W24x104	1.3	119.63	---	---	129.81	---	---	3.24	---
	F2-14	Plate	1.3	99.99	---	---	86.98	---	---	5.97	---
	F1A-15	Plate	1.3	139.47	---	---	91.46	---	---	7.46	---
	F1B-15	Plate	1.3	139.41	---	---	94.90	---	---	7.68	---
	F1C-15	Plate	1.3	139.78	---	---	92.42	---	---	8.40	---
	S1-15	W21x111	1.3	107.38	---	---	112.98	---	---	3.65	---
	S2-15	W21x111	1.3	108.08	---	---	130.91	---	---	3.15	---
	S3-15	W21x101	1.3	107.49	---	---	131.84	---	---	2.78	---
	S4-15	W21x101	1.3	107.49	---	---	129.53	---	---	2.83	---
	S5-15	W21x101	1.3	107.48	---	---	130.07	---	---	2.82	---
	S6-15	W21x101	1.3	106.75	---	---	129.73	---	---	2.83	---
	S7-15	W21x101	1.3	110.68	---	---	139.29	---	---	2.61	---
	F2A-15	Plate	1.3	91.03	---	---	86.97	---	---	6.45	---
	F2B-15	Plate	1.3	91.23	---	---	92.82	---	---	5.36	---
	F2C-15	Plate	1.3	91.51	---	---	91.91	---	---	5.73	---
	F1-16	Plate	1.3	124.05	---	---	87.89	---	---	9.93	---
	S1-16	W24x94	1.3	95.23	---	---	95.36	---	---	3.96	---
S2-16	W24x94	1.3	98.99	---	---	116.12	---	---	3.23	---	
S3-16	W24x94	1.3	102.83	---	---	117.57	---	---	3.16	---	
S4-16	W24x104	1.3	107.33	---	---	120.16	---	---	3.58	---	
S5-16	W24x104	1.3	110.60	---	---	122.72	---	---	3.49	---	
S6-16	W24x104	1.3	113.18	---	---	125.31	---	---	3.40	---	
S7-16	W24x104	1.3	120.78	---	---	145.17	---	---	2.89	---	
F2-16	Plate	1.3	103.24	---	---	97.22	---	---	6.17	---	

Lakefront Trestle - Stringer Ratings



Made By: CTG  
 Checked By: DWC

Date: 5/31/2012 Job No.: p402110046  
 Date: 6/7/2012

Stringer Ratings - As Built (coped stringers are simple span)

Stringers	Shape	Impact	RATING SUMMARY								
			SERVICE MOMENT (kip-ft)						RATING FACTOR - 2F1		
			DEAD LOAD			LIVE LOAD			M+	M-	
			Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Opr.	Opr.	
SECTION F	F1-17	Plate	1.3	142.45	---	---	93.60	---	---	8.48	---
	S1-17	W24x104	1.3	111.70	---	---	102.38	---	---	4.17	---
	S2-17	W24x104	1.3	115.81	---	---	126.70	---	---	3.35	---
	S3-17	W24x104	1.3	119.98	---	---	129.03	---	---	3.26	---
	S4-17	W24x104	1.3	123.44	---	---	131.28	---	---	3.18	---
	S5-17	W24x117	1.3	128.99	---	---	133.58	---	---	3.60	---
	S6-17	W24x117	1.3	131.79	---	---	135.87	---	---	3.53	---
	S7-17	W24x117	1.3	140.27	---	---	157.07	---	---	3.01	---
	F2-17	Plate	1.3	118.36	---	---	102.91	---	---	6.19	---
	F1A-18	Plate	1.3	160.79	---	---	100.44	---	---	8.17	---
	F1B-18	Plate	1.3	161.59	---	---	103.82	---	---	8.95	---
	S1-18	W21x101	1.3	87.21	69.58	---	93.14	37.50	---	4.10	10.55
	S2-18	W21x101	1.3	89.35	66.96	---	108.42	50.71	---	3.51	7.84
	S3-18	W21x101	1.3	91.15	64.97	---	109.20	47.08	---	3.47	8.48
	S4-18	W21x101	1.3	91.38	64.46	---	109.82	46.20	---	3.45	8.65
	S5-18	W21x101	1.3	90.43	66.39	---	107.96	48.25	---	3.52	8.25
	S6-18	W21x101	1.3	88.07	69.54	---	108.14	50.93	---	3.53	7.77
	S7-18	W21x101	1.3	88.31	77.97	---	123.14	53.56	---	3.10	7.27
	F2A-18	Plate	1.3	106.16	---	---	98.20	---	---	6.21	---
	F2B-18	Plate	1.3	106.21	---	---	97.85	---	---	6.29	---
F1-19	Plate	1.3	159.00	---	---	98.83	---	---	9.99	---	
S1-19	W24x104	1.3	120.70	---	---	131.93	---	---	3.18	---	
S2-19	W24x104	1.3	122.04	---	---	144.09	---	---	2.91	---	
S3-19	W24x104	1.3	122.04	---	---	80.80	---	---	5.19	---	
S4-19	W24x104	1.3	124.04	---	---	146.26	---	---	2.86	---	
S5-19	W24x104	1.3	124.65	---	---	146.38	---	---	2.85	---	
S6-19	W24x104	1.3	124.46	---	---	146.52	---	---	2.85	---	
S7-19	W24x104	1.3	129.51	---	---	146.37	---	---	2.82	---	
F2-19	Plate	1.3	107.24	---	---	91.29	---	---	5.71	---	

Lakefront Trestle - Stringer Ratings



Made By: CTG  
 Checked By: DWC

Date: 5/31/2012 Job No.: p402110046  
 Date: 6/7/2012

Stringer Ratings - As Built (coped stringers are simple span)

Stringers	Shape	Impact	RATING SUMMARY								
			SERVICE MOMENT (kip-ft)						RATING FACTOR - 2F1		
			DEAD LOAD			LIVE LOAD			M+	M-	
			Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Opr.	Opr.	
SECTION G	F1-20	Plate	1.3	116.46	---	---	82.20	---	---	8.53	---
	S1-20	W21x101	1.3	90.48	---	---	112.35	---	---	3.38	---
	S2-20	W21x101	1.3	91.52	---	---	122.16	---	---	3.10	---
	S3-20	W21x101	1.3	92.73	---	---	122.68	---	---	3.08	---
	S4-20	W21x101	1.3	93.26	---	---	123.23	---	---	3.06	---
	S5-20	W21x101	1.3	93.78	---	---	123.74	---	---	3.05	---
	S6-20	W21x101	1.3	93.62	---	---	124.29	---	---	3.03	---
	S7-20	W21x101	1.3	97.45	---	---	111.15	---	---	3.37	---
	F2-20	Plate	1.3	80.53	---	---	74.05	---	---	7.82	---
	F1-21	Plate	1.3	190.72	---	---	123.65	28.74	---	5.30	---
	S1-21	W18x86	1.3	66.91	46.75	---	91.05	48.58	---	3.06	6.06
	S2-21	W18x86	1.3	65.78	50.06	---	96.84	54.67	---	2.89	5.34
	S3-21	W18x86	1.3	62.83	57.33	---	98.34	52.11	---	2.87	5.49
	S4-21	W18x86	1.3	57.40	68.19	---	98.03	52.61	---	2.92	5.28
	S5-21	W18x86	1.3	50.53	81.92	---	95.20	57.47	---	3.06	4.65
	S6-21	W18x86	1.3	43.00	95.63	---	91.51	63.82	---	3.25	4.02
	S7-21	W18x86	1.3	94.05	---	---	111.07	---	---	2.32	---
	F2-21	Plate	1.3	0.00	195.60	---	55.81	37.13	---	11.09	12.62
	F1-22	Plate	1.3	12.74	131.70	---	107.50	44.21	---	7.16	15.35
	S1-22	W16x77	1.3	28.69	60.69	---	71.49	34.28	---	3.42	6.41
	S2-22	W16x77	1.3	31.91	54.98	---	75.95	37.38	---	3.18	5.99
	S3-22	W16x77	1.3	36.50	46.95	---	77.55	32.95	---	3.07	6.99
S4-22	W16x77	1.3	39.92	40.10	---	78.62	31.19	---	3.00	7.55	
S5-22	W16x77	1.3	41.91	36.15	---	78.16	31.96	---	2.99	7.46	
S6-22	W16x77	1.3	42.17	34.28	---	77.53	35.74	---	3.02	6.71	
S7-22	W16x77	1.3	61.42	---	---	81.56	---	---	2.69	---	
F2-22	Plate	1.3	76.61	---	---	67.32	6.74	---	6.53	---	

Lakefront Trestle - Stringer Ratings



Made By: CTG  
 Checked By: DWC

Date: 5/31/2012 Job No.: p402110046  
 Date: 6/7/2012

Stringer Ratings - As Built (coped stringers are simple span)

Stringers	Shape	Impact	RATING SUMMARY								
			SERVICE MOMENT (kip-ft)						RATING FACTOR - 2F1		
			DEAD LOAD			LIVE LOAD			M+	M-	
			Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Opr.	Opr.	
SECTION H	F1-1	Plate	1.3	63.20	---	98.28	118.22	33.42	43.87	4.85	12.46
	S1-1	W16x67	1.3	33.38	28.34	50.15	60.05	31.72	29.04	3.42	6.59
	S2-1	W16x67	1.3	34.51	26.17	58.87	63.29	34.06	32.09	3.23	5.78
	S3-1	W16x67	1.3	34.51	26.17	63.62	64.75	28.62	28.57	3.15	6.36
	S4-1	W16x67	1.3	43.49	44.47	---	77.65	26.52	---	2.54	7.41
	S5-1	W16x67	1.3	43.50	51.24	---	77.65	30.11	---	2.54	6.36
	S6-1	W16x67	1.3	46.66	---	---	78.73	---	---	2.48	---
	S7-1	W16x67	1.3	48.43	---	---	69.84	---	---	2.77	---
	F2-1	Plate	1.3	5.33	137.09	96.06	50.18	27.54	26.56	9.40	13.46
	F1-2	Plate	1.3	89.87	58.61	---	90.30	26.88	14.91	5.47	20.25
	S1-2	W16x67	1.3	39.45	39.00	7.75	63.08	28.24	25.53	3.18	7.11
	S2-2	W16x67	1.3	43.78	40.96	---	66.88	30.88	29.07	2.95	6.45
	S3-2	W16x67	1.3	43.49	---	---	77.05	---	---	2.56	---
	S4-2	W16x67	1.3	43.49	---	---	77.04	---	---	2.56	---
	S5-2	W16x67	1.3	43.49	---	---	77.05	---	---	2.56	---
	S6-2	W16x67	1.3	43.49	---	---	77.05	---	---	2.56	---
	S7-2	W16x67	1.3	45.15	---	---	66.23	---	---	2.96	---
	F2-2	Plate	1.3	105.44	---	---	63.91	2.47	2.55	6.69	---
	F1-3	Plate	1.3	110.86	---	---	72.45	3.36	---	7.25	---
	S1-3	W16x67	1.3	33.25	13.24	---	57.14	25.62	---	3.59	8.61
	S2-3	W16x67	1.3	33.04	14.22	---	59.61	27.64	---	3.44	7.95
	S3-3	W16x67	1.3	40.02	---	---	70.03	---	---	2.86	---
	S4-3	W16x67	1.3	40.04	---	---	70.00	---	---	2.86	---
	S5-3	W16x67	1.3	40.04	---	---	70.03	---	---	2.86	---
	S6-3	W16x67	1.3	40.04	---	---	70.00	---	---	2.86	---
	S7-3	W16x67	1.3	41.55	---	---	63.10	---	---	3.15	---
	F2-3	Plate	1.3	9.58	67.49	---	53.88	15.81	---	9.30	28.89
	F1-4	Plate	1.3	7.65	146.84	160.68	68.18	38.61	33.28	8.71	12.62
S1-4	W16x67	1.3	46.42	---	---	76.97	---	---	2.53	---	
S2-4	W16x67	1.3	46.69	---	---	81.71	---	---	2.38	---	
S3-4	W16x67	1.3	46.65	---	---	81.63	---	---	2.39	---	
S4-4	W16x67	1.3	46.69	---	---	81.69	---	---	2.39	---	
S5-4	W16x67	1.3	46.66	---	---	81.65	---	---	2.39	---	
S6-4	W16x67	1.3	46.66	---	---	81.67	---	---	2.39	---	
S7-4	W16x67	1.3	48.45	---	---	69.29	---	---	2.79	---	
F2-4	Plate	1.3	41.79	62.17	62.28	66.89	24.22	16.32	7.12	19.03	

Lakefront Trestle - Stringer Ratings



Made By: CTG  
 Checked By: DWC

Date: 5/31/2012 Job No.: p402110046  
 Date: 6/7/2012

Stringer Ratings - As Built (coped stringers are simple span)

Stringers	Shape	Impact	RATING SUMMARY								
			SERVICE MOMENT (kip-ft)						RATING FACTOR - 3F1		
			DEAD LOAD			LIVE LOAD			M+	M-	
			Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Opr.	Opr.	
SECTION A	F1-1	Plate	1.3	156.25	---	---	166.62	12.48	---	3.11	---
	S1-1	W21x73	1.3	63.23	36.06	---	137.55	56.03	---	1.87	4.95
	S2-1	W21x73	1.3	66.34	30.80	---	149.59	66.05	---	1.70	4.26
	S3-1	W21x73	1.3	69.33	26.13	---	152.09	60.79	---	1.66	4.69
	S4-1	W21x73	1.3	70.10	24.59	---	153.09	58.79	---	1.64	4.87
	S5-1	W21x73	1.3	68.52	27.75	---	151.54	61.89	---	1.67	4.59
	S6-1	W21x73	1.3	64.44	34.60	---	148.58	66.60	---	1.72	4.18
	S7-1	W21x73	1.3	61.42	46.58	---	131.05	54.45	---	1.97	4.95
	F2-1	Plate	1.3	145.12	---	---	171.76	12.39	---	3.71	---
	F1-2	Plate	1.3	36.48	180.35	---	106.06	98.01	---	5.60	4.93
	S1-2	W21x73	1.3	38.98	99.68	---	130.27	77.02	---	2.11	2.97
	S2-2	W21x73	1.3	38.66	101.88	---	144.40	82.83	---	1.91	2.74
	S3-2	W21x73	1.3	39.31	100.93	---	146.86	78.28	---	1.87	2.91
	S4-2	W21x73	1.3	39.61	100.02	---	147.67	76.50	---	1.86	2.99
	S5-2	W21x73	1.3	39.48	100.41	---	146.25	79.60	---	1.88	2.87
	S6-2	W21x73	1.3	38.97	100.92	---	143.60	84.47	---	1.92	2.70
	S7-2	W21x73	1.3	41.26	102.01	---	124.75	74.73	---	2.19	3.04
	F2-2	Plate	1.3	13.38	168.33	---	94.13	115.09	---	7.85	5.39
	F1-3	Plate	1.3	102.90	---	---	112.71	---	---	4.68	---
	S1-3	W24x84	1.3	79.47	---	---	155.42	---	---	2.17	---
	S2-3	W24x84	1.3	80.94	---	---	174.05	---	---	1.93	---
S3-3	W24x84	1.3	82.54	---	---	175.38	---	---	1.91	---	
S4-3	W24x94	1.3	84.59	---	---	176.70	---	---	2.18	---	
S5-3	W24x94	1.3	85.57	---	---	178.00	---	---	2.16	---	
S6-3	W24x94	1.3	85.89	---	---	178.56	---	---	2.16	---	
S7-3	W24x94	1.3	89.96	---	---	172.94	---	---	2.21	---	
F2-3	Plate	1.3	76.47	---	---	105.24	---	---	6.04	---	

Lakefront Trestle - Stringer Ratings



Made By: CTG  
 Checked By: DWC

Date: 5/31/2012 Job No.: p402110046  
 Date: 6/7/2012

Stringer Ratings - As Built (coped stringers are simple span)

Stringers	Shape	Impact	RATING SUMMARY								
			SERVICE MOMENT (kip-ft)						RATING FACTOR - 3F1		
			DEAD LOAD			LIVE LOAD			M+	M-	
			Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Opr.	Opr.	
SECTION B	F1-4	Plate	1.3	102.87	---	---	111.00	---	---	4.59	---
	S1-4	W24x84	1.3	79.46	---	---	137.68	---	---	2.44	---
	S2-4	W24x84	1.3	80.94	---	---	163.05	---	---	2.06	---
	S3-4	W24x84	1.3	82.55	---	---	164.42	---	---	2.03	---
	S4-4	W24x94	1.3	84.59	---	---	164.36	---	---	2.35	---
	S5-4	W24x94	1.3	85.57	---	---	164.32	---	---	2.34	---
	S6-4	W24x94	1.3	85.90	---	---	164.70	---	---	2.34	---
	S7-4	W24x94	1.3	90.04	---	---	177.45	---	---	2.15	---
	F2-4	Plate	1.3	76.49	---	---	107.25	---	---	5.77	---
	F1A-5	Plate	1.3	107.31	---	---	111.71	---	---	5.02	---
	F1B-5	Plate	1.3	107.79	---	---	115.64	---	---	4.46	---
	S1-5	W18x76	1.3	81.50	---	---	154.72	---	---	1.46	---
	S2-5	W18x76	1.3	82.04	---	---	167.58	---	---	1.35	---
	S3-5	W18x76	1.3	57.55	50.27	---	142.45	59.63	---	1.72	4.20
	S4-5	W18x76	1.3	58.04	49.30	---	142.88	57.06	---	1.71	4.41
	S5-5	W18x76	1.3	57.51	50.39	---	139.06	61.09	---	1.76	4.10
	S6-5	W18x76	1.3	55.77	52.53	---	134.69	65.83	---	1.83	3.78
	S7-5	W18x76	1.3	55.77	58.64	---	144.10	66.16	---	1.71	3.69
	F2A-5	Plate	1.3	73.40	---	---	106.47	---	---	6.22	---
	F2B-5	Plate	1.3	73.21	---	---	99.53	---	---	6.35	---
	F1-6	Plate	1.3	90.14	---	---	101.29	---	---	4.40	---
	S1-6	W21x93	1.3	73.15	---	---	144.72	---	---	2.32	---
	S2-6	W21x93	1.3	76.77	---	---	162.32	---	---	2.05	---
	S3-6	W21x93	1.3	80.63	---	---	164.43	---	---	2.01	---
S4-6	W21x93	1.3	83.94	---	---	171.55	---	---	1.91	---	
S5-6	W21x101	1.3	88.25	---	---	179.57	---	---	2.12	---	
S6-6	W21x101	1.3	91.05	---	---	181.55	---	---	2.09	---	
S7-6	W21x101	1.3	97.94	---	---	180.99	---	---	2.07	---	
F2-6	Plate	1.3	84.13	---	---	111.66	---	---	5.25	---	

Lakefront Trestle - Stringer Ratings



Made By: CTG  
Checked By: DWC

Date: 5/31/2012 Job No.: p402110046  
Date: 6/7/2012

Stringer Ratings - As Built (coped stringers are simple span)

Stringers	Shape	Impact	RATING SUMMARY								
			SERVICE MOMENT (kip-ft)						RATING FACTOR - 3F1		
			DEAD LOAD			LIVE LOAD			M+	M-	
			Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Opr.	Opr.	
SECTION C	F1-7	Plate	1.3	64.19	---	---	77.28	---	---	7.15	---
	S1-7	W21x73	1.3	50.49	---	---	107.06	---	---	2.49	---
	S2-7	W21x73	1.3	53.43	---	---	121.95	---	---	2.17	---
	S3-7	W21x73	1.3	56.64	---	---	130.87	---	---	2.00	---
	S4-7	W21x83	1.3	60.11	---	---	131.20	---	---	2.30	---
	S5-7	W21x83	1.3	62.94	---	---	139.36	---	---	2.15	---
	S6-7	W21x83	1.3	65.27	---	---	142.45	---	---	2.09	---
	S7-7	W21x83	1.3	70.72	---	---	145.73	---	---	2.01	---
	F2-7	Plate	1.3	62.29	---	---	87.82	---	---	6.27	---
	F1A-8	Plate	1.3	76.65	---	---	90.66	---	---	5.72	---
	F1B-8	Plate	1.3	76.29	---	---	90.63	---	---	5.47	---
	F1C-8	Plate	1.3	88.15	---	---	99.02	---	---	4.67	---
	S1-8	W18x86	1.3	67.73	---	---	104.83	---	---	2.65	---
	S2-8	W18x97	1.3	69.30	---	---	125.16	---	---	2.57	---
	S3-8	W18x86	1.3	68.95	---	---	127.05	---	---	2.18	---
	S4-8	W18x86	1.3	68.94	---	---	124.83	---	---	2.22	---
	S5-8	W18x86	1.3	68.95	---	---	126.40	---	---	2.19	---
	S6-8	W18x86	1.3	68.35	---	---	124.02	---	---	2.24	---
	S7-8	W18x86	1.3	71.00	---	---	155.34	---	---	1.77	---
	F2A-8	Plate	1.3	51.57	---	---	87.09	---	---	6.07	---
	F2B-8	Plate	1.3	51.45	---	---	96.15	---	---	6.26	---
	F2C-8	Plate	1.3	59.44	---	---	114.10	---	---	5.03	---
	F1A-9	Plate	1.3	88.08	---	---	99.80	---	---	4.41	---
	F1B-9	Plate	1.3	89.16	---	---	98.45	---	---	3.88	---
	F1C-9	Plate	1.3	76.34	---	---	91.68	---	---	4.28	---
	S1-9	W18x97	1.3	69.64	---	---	121.53	---	---	2.64	---
	S2-9	W18x97	1.3	70.19	---	---	136.86	---	---	2.34	---
	S3-9	W18x97	1.3	70.79	---	---	133.29	---	---	2.40	---
	S4-9	W18x97	1.3	70.79	---	---	136.82	---	---	2.34	---
	S5-9	W18x86	1.3	69.82	---	---	133.28	---	---	2.07	---
S6-9	W18x97	1.3	70.19	---	---	137.06	---	---	2.34	---	
S7-9	W18x97	1.3	72.79	---	---	155.31	---	---	2.05	---	
F2A-9	Plate	1.3	59.33	---	---	108.48	---	---	5.08	---	
F2B-9	Plate	1.3	60.07	---	---	103.18	---	---	5.22	---	
F2C-9	Plate	1.3	51.21	---	---	78.44	---	---	6.81	---	
F1-10	Plate	1.3	63.62	---	---	87.91	---	---	5.02	---	
S1-10	W21x73	1.3	50.73	---	---	114.18	---	---	2.33	---	
S2-10	W21x73	1.3	53.56	---	---	118.72	---	---	2.22	---	
S3-10	W21x73	1.3	56.74	---	---	121.37	---	---	2.16	---	
S4-10	W21x83	1.3	60.18	---	---	128.40	---	---	2.35	---	
S5-10	W21x83	1.3	63.00	---	---	129.76	---	---	2.31	---	
S6-10	W21x83	1.3	65.30	---	---	137.52	---	---	2.16	---	
S7-10	W21x83	1.3	70.58	---	---	106.25	---	---	2.76	---	
F2-10	Plate	1.3	61.02	---	---	85.62	---	---	6.02	---	



**Lakefront Trestle - Stringer Ratings**



Made By: CTG  
 Checked By: DWC

Date: 5/31/2012 Job No.: p402110046  
 Date: 6/7/2012

**Stringer Ratings - As Built (coped stringers are simple span)**

Stringers	Shape	Impact	RATING SUMMARY								
			SERVICE MOMENT (kip-ft)						RATING FACTOR - 3F1		
			DEAD LOAD			LIVE LOAD			M+	M-	
			Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Opr.	Opr.	
SECTION D	F1-11	Plate	1.3	76.21	---	---	106.64	---	---	4.93	---
	S1-11	W18x86	1.3	51.09	---	---	116.47	---	---	2.50	---
	S2-11	W18x86	1.3	45.86	---	---	106.51	---	---	2.77	---
	S3-11	W18x86	1.3	40.69	---	---	98.01	---	---	3.05	---
	S4-11	W18x65	1.3	34.86	---	---	90.54	---	---	2.31	---
	S5-11	W18x65	1.3	30.43	---	---	83.02	---	---	2.56	---
	S6-11	W18x65	1.3	26.30	---	---	75.46	---	---	2.86	---
	S7-11	W18x65	1.3	23.33	---	---	40.78	---	---	5.35	---
	F2-11	Plate	1.3	18.23	---	---	36.26	---	---	15.13	---
	F1A-12	Plate	1.3	93.89	---	---	122.70	---	---	4.28	---
	F1B-12	Plate	1.3	95.35	---	---	122.25	---	---	4.45	---
	S1-12	W21x101	1.3	75.11	---	---	153.09	---	---	2.56	---
	S2-12	W21x101	1.3	75.42	---	---	149.77	---	---	2.61	---
	S3-12	W21x101	1.3	76.05	---	---	149.15	---	---	2.62	---
	S4-12	W21x101	1.3	76.05	---	---	150.24	---	---	2.60	---
	S5-12	W21x101	1.3	76.05	---	---	149.36	---	---	2.62	---
	S6-12	W21x101	1.3	75.42	---	---	149.65	---	---	2.61	---
	S7-12	W21x101	1.3	77.90	---	---	101.11	---	---	3.85	---
	F2A-12	Plate	1.3	62.68	---	---	85.98	---	---	5.98	---
	F2B-12	Plate	1.3	63.51	---	---	89.11	---	---	5.77	---
	F1-13	Plate	1.3	11.71	---	---	26.87	---	---	23.34	---
	S1-13	W18x55	1.3	13.77	---	---	47.00	---	---	4.00	---
	S2-13	W18x55	1.3	19.52	---	---	60.73	---	---	3.03	---
	S3-13	W18x55	1.3	26.17	---	---	74.25	---	---	2.41	---
	S4-13	W18x71	1.3	34.50	---	---	86.02	---	---	2.70	---
	S5-13	W18x71	1.3	43.28	---	---	101.27	---	---	2.23	---
	S6-13	W18x86	1.3	54.11	---	---	116.73	---	---	2.47	---
	S7-13	W18x86	1.3	67.50	---	---	105.23	---	---	2.64	---
F2-13	Plate	1.3	62.79	---	---	90.40	---	---	5.57	---	

Lakefront Trestle - Stringer Ratings



Made By: CTG  
 Checked By: DWC

Date: 5/31/2012 Job No.: p402110046  
 Date: 6/7/2012

Stringer Ratings - As Built (coped stringers are simple span)

Stringers	Shape	Impact	RATING SUMMARY								
			SERVICE MOMENT (kip-ft)						RATING FACTOR - 3F1		
			DEAD LOAD			LIVE LOAD			M+	M-	
			Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Opr.	Opr.	
SECTION E	F1-14	Plate	1.3	124.43	---	---	135.01	---	---	4.80	---
	S1-14	W24x94	1.3	96.55	---	---	177.27	---	---	2.12	---
	S2-14	W24x94	1.3	99.79	---	---	192.61	---	---	1.94	---
	S3-14	W24x94	1.3	103.29	---	---	197.20	---	---	1.88	---
	S4-14	W24x104	1.3	107.46	---	---	201.32	---	---	2.14	---
	S5-14	W24x104	1.3	110.37	---	---	205.42	---	---	2.08	---
	S6-14	W24x104	1.3	112.58	---	---	209.87	---	---	2.03	---
	S7-14	W24x104	1.3	119.63	---	---	189.78	---	---	2.22	---
	F2-14	Plate	1.3	99.99	---	---	125.17	---	---	4.15	---
	F1A-15	Plate	1.3	139.47	---	---	132.50	---	---	5.15	---
	F1B-15	Plate	1.3	139.41	---	---	134.20	---	---	5.43	---
	F1C-15	Plate	1.3	139.78	---	---	136.74	---	---	5.68	---
	S1-15	W21x111	1.3	107.38	---	---	162.96	---	---	2.53	---
	S2-15	W21x111	1.3	108.08	---	---	191.69	---	---	2.15	---
	S3-15	W21x101	1.3	107.49	---	---	191.58	---	---	1.91	---
	S4-15	W21x101	1.3	107.49	---	---	192.03	---	---	1.91	---
	S5-15	W21x101	1.3	107.48	---	---	191.32	---	---	1.92	---
	S6-15	W21x101	1.3	106.75	---	---	190.50	---	---	1.93	---
	S7-15	W21x101	1.3	110.68	---	---	205.25	---	---	1.77	---
	F2A-15	Plate	1.3	91.03	---	---	127.41	---	---	4.40	---
	F2B-15	Plate	1.3	91.23	---	---	136.21	---	---	3.65	---
	F2C-15	Plate	1.3	91.51	---	---	134.03	---	---	3.93	---
	F1-16	Plate	1.3	124.05	---	---	123.11	---	---	7.09	---
	S1-16	W24x94	1.3	95.23	---	---	138.06	---	---	2.74	---
S2-16	W24x94	1.3	98.99	---	---	171.37	---	---	2.19	---	
S3-16	W24x94	1.3	102.83	---	---	173.90	---	---	2.14	---	
S4-16	W24x104	1.3	107.33	---	---	178.30	---	---	2.41	---	
S5-16	W24x104	1.3	110.60	---	---	185.47	---	---	2.31	---	
S6-16	W24x104	1.3	113.18	---	---	186.66	---	---	2.28	---	
S7-16	W24x104	1.3	120.78	---	---	212.72	---	---	1.97	---	
F2-16	Plate	1.3	103.24	---	---	145.97	---	---	4.11	---	

Lakefront Trestle - Stringer Ratings



Made By: CTG  
 Checked By: DWC

Date: 5/31/2012 Job No.: p402110046  
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Stringer Ratings - As Built (coped stringers are simple span)

Stringers	Shape	Impact	RATING SUMMARY								
			SERVICE MOMENT (kip-ft)						RATING FACTOR - 3F1		
			DEAD LOAD			LIVE LOAD			M+	M-	
			Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Opr.	Opr.	
SECTION F	F1-17	Plate	1.3	142.45	---	---	135.49	---	---	5.86	---
	S1-17	W24x104	1.3	111.70	---	---	150.82	---	---	2.83	---
	S2-17	W24x104	1.3	115.81	---	---	191.71	---	---	2.21	---
	S3-17	W24x104	1.3	119.98	---	---	191.44	---	---	2.20	---
	S4-17	W24x104	1.3	123.44	---	---	196.06	---	---	2.13	---
	S5-17	W24x117	1.3	128.99	---	---	201.66	---	---	2.39	---
	S6-17	W24x117	1.3	131.79	---	---	202.03	---	---	2.37	---
	S7-17	W24x117	1.3	140.27	---	---	235.78	---	---	2.00	---
	F2-17	Plate	1.3	118.36	---	---	155.20	---	---	4.10	---
	F1A-18	Plate	1.3	160.79	---	---	148.55	---	---	5.53	---
	F1B-18	Plate	1.3	161.59	---	---	147.55	---	---	6.30	---
	S1-18	W21x101	1.3	87.21	69.58	---	137.53	55.20	---	2.78	7.17
	S2-18	W21x101	1.3	89.35	66.96	---	162.12	75.23	---	2.35	5.29
	S3-18	W21x101	1.3	91.15	64.97	---	166.18	70.45	---	2.28	5.67
	S4-18	W21x101	1.3	91.38	64.46	---	165.35	68.10	---	2.29	5.87
	S5-18	W21x101	1.3	90.43	66.39	---	164.26	71.97	---	2.31	5.53
	S6-18	W21x101	1.3	88.07	69.54	---	162.96	75.49	---	2.34	5.24
	S7-18	W21x101	1.3	88.31	77.97	---	185.82	78.81	---	2.05	4.94
	F2A-18	Plate	1.3	106.16	---	---	146.44	---	---	4.17	---
	F2B-18	Plate	1.3	106.21	---	---	140.99	---	---	4.36	---
F1-19	Plate	1.3	159.00	---	---	145.67	---	---	6.78	---	
S1-19	W24x104	1.3	120.70	---	---	194.47	---	---	2.16	---	
S2-19	W24x104	1.3	122.04	---	---	214.78	---	---	1.95	---	
S3-19	W24x104	1.3	122.04	---	---	118.08	---	---	3.55	---	
S4-19	W24x104	1.3	124.04	---	---	217.20	---	---	1.92	---	
S5-19	W24x104	1.3	124.65	---	---	217.66	---	---	1.92	---	
S6-19	W24x104	1.3	124.46	---	---	217.53	---	---	1.92	---	
S7-19	W24x104	1.3	129.51	---	---	219.27	---	---	1.89	---	
F2-19	Plate	1.3	107.24	---	---	132.85	---	---	3.92	---	

Lakefront Trestle - Stringer Ratings



Made By: CTG  
 Checked By: DWC

Date: 5/31/2012 Job No.: p402110046  
 Date: 6/7/2012

Stringer Ratings - As Built (coped stringers are simple span)

Stringers	Shape	Impact	RATING SUMMARY								
			SERVICE MOMENT (kip-ft)						RATING FACTOR - 3F1		
			DEAD LOAD			LIVE LOAD			M+	M-	
			Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Opr.	Opr.	
SECTION G	F1-20	Plate	1.3	116.46	---	---	118.49	---	---	5.92	---
	S1-20	W21x101	1.3	90.48	---	---	166.11	---	---	2.28	---
	S2-20	W21x101	1.3	91.52	---	---	179.50	---	---	2.11	---
	S3-20	W21x101	1.3	92.73	---	---	180.37	---	---	2.09	---
	S4-20	W21x101	1.3	93.26	---	---	181.26	---	---	2.08	---
	S5-20	W21x101	1.3	93.78	---	---	182.10	---	---	2.07	---
	S6-20	W21x101	1.3	93.62	---	---	183.00	---	---	2.06	---
	S7-20	W21x101	1.3	97.45	---	---	160.66	---	---	2.33	---
	F2-20	Plate	1.3	80.53	---	---	104.86	---	---	5.52	---
	F1-21	Plate	1.3	190.72	---	---	179.80	43.58	---	3.64	---
	S1-21	W18x86	1.3	66.91	46.75	---	134.55	71.15	---	2.07	4.14
	S2-21	W18x86	1.3	65.78	50.06	---	143.73	80.95	---	1.95	3.60
	S3-21	W18x86	1.3	62.83	57.33	---	144.90	75.73	---	1.95	3.78
	S4-21	W18x86	1.3	57.40	68.19	---	144.26	76.13	---	1.98	3.65
	S5-21	W18x86	1.3	50.53	81.92	---	141.06	84.44	---	2.07	3.16
	S6-21	W18x86	1.3	43.00	95.63	---	137.00	95.40	---	2.17	2.69
	S7-21	W18x86	1.3	94.05	---	---	161.68	---	---	1.59	---
	F2-21	Plate	1.3	0.00	195.60	---	79.28	55.29	---	7.81	8.48
	F1-22	Plate	1.3	12.74	131.70	---	154.56	67.44	---	4.98	10.06
	S1-22	W16x77	1.3	28.69	60.69	---	101.23	50.40	---	2.41	4.36
	S2-22	W16x77	1.3	31.91	54.98	---	108.31	54.84	---	2.23	4.08
	S3-22	W16x77	1.3	36.50	46.95	---	112.56	48.36	---	2.12	4.76
S4-22	W16x77	1.3	39.92	40.10	---	114.15	45.13	---	2.06	5.22	
S5-22	W16x77	1.3	41.91	36.15	---	111.60	47.17	---	2.10	5.06	
S6-22	W16x77	1.3	42.17	34.28	---	109.88	52.92	---	2.13	4.53	
S7-22	W16x77	1.3	61.42	---	---	120.77	---	---	1.81	---	
F2-22	Plate	1.3	76.61	---	---	96.34	10.14	---	4.57	---	

Lakefront Trestle - Stringer Ratings



Made By: CTG  
 Checked By: DWC

Date: 5/31/2012 Job No.: p402110046  
 Date: 6/7/2012

Stringer Ratings - As Built (coped stringers are simple span)

Stringers	Shape	Impact	RATING SUMMARY								
			SERVICE MOMENT (kip-ft)						RATING FACTOR - 3F1		
			DEAD LOAD			LIVE LOAD			M+	M-	
			Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Opr.	Opr.	
SECTION H	F1-1	Plate	1.3	63.20	---	98.28	172.03	51.02	67.15	3.33	8.14
	S1-1	W16x67	1.3	33.38	28.34	50.15	86.73	44.72	48.91	2.36	3.93
	S2-1	W16x67	1.3	34.51	26.17	58.87	90.85	47.90	52.32	2.25	3.55
	S3-1	W16x67	1.3	34.51	26.17	63.62	92.40	41.19	43.73	2.21	4.16
	S4-1	W16x67	1.3	43.49	44.47	---	108.40	38.63	---	1.82	5.09
	S5-1	W16x67	1.3	43.50	51.24	---	108.40	43.14	---	1.82	4.44
	S6-1	W16x67	1.3	46.66	---	---	113.49	---	---	1.72	---
	S7-1	W16x67	1.3	48.43	---	---	100.12	---	---	1.93	---
	F2-1	Plate	1.3	5.33	137.09	96.06	72.21	42.06	39.73	6.54	8.81
	F1-2	Plate	1.3	89.87	58.61	---	128.27	41.02	22.61	3.85	13.27
	S1-2	W16x67	1.3	39.45	39.00	7.75	85.84	41.18	43.92	2.33	4.88
	S2-2	W16x67	1.3	43.78	40.96	---	90.10	45.61	47.46	2.19	4.37
	S3-2	W16x67	1.3	43.49	---	---	109.22	---	---	1.81	---
	S4-2	W16x67	1.3	43.49	---	---	109.22	---	---	1.81	---
	S5-2	W16x67	1.3	43.49	---	---	109.22	---	---	1.81	---
	S6-2	W16x67	1.3	43.49	---	---	109.24	---	---	1.81	---
	S7-2	W16x67	1.3	45.15	---	---	93.71	---	---	2.09	---
	F2-2	Plate	1.3	105.44	---	---	92.31	3.67	3.87	4.63	---
	F1-3	Plate	1.3	110.86	---	---	103.09	4.23	---	5.10	---
	S1-3	W16x67	1.3	33.25	13.24	---	81.90	42.07	---	2.51	5.24
	S2-3	W16x67	1.3	33.04	14.22	---	85.42	46.31	---	2.40	4.75
	S3-3	W16x67	1.3	40.02	---	---	101.99	---	---	1.96	---
	S4-3	W16x67	1.3	40.04	---	---	101.96	---	---	1.96	---
	S5-3	W16x67	1.3	40.04	---	---	101.99	---	---	1.96	---
	S6-3	W16x67	1.3	40.04	---	---	101.97	---	---	1.96	---
	S7-3	W16x67	1.3	41.55	---	---	91.22	---	---	2.18	---
	F2-3	Plate	1.3	9.58	67.49	---	72.65	24.18	---	6.90	18.89
	F1-4	Plate	1.3	7.65	146.84	160.68	95.38	58.37	50.84	6.23	8.34
S1-4	W16x67	1.3	46.42	---	---	108.20	---	---	1.80	---	
S2-4	W16x67	1.3	46.69	---	---	114.34	---	---	1.70	---	
S3-4	W16x67	1.3	46.65	---	---	114.25	---	---	1.71	---	
S4-4	W16x67	1.3	46.69	---	---	114.33	---	---	1.70	---	
S5-4	W16x67	1.3	46.66	---	---	114.28	---	---	1.71	---	
S6-4	W16x67	1.3	46.66	---	---	114.28	---	---	1.71	---	
S7-4	W16x67	1.3	48.45	---	---	102.31	---	---	1.89	---	
F2-4	Plate	1.3	41.79	62.17	62.28	95.51	37.09	24.98	4.99	12.42	

Lakefront Trestle - Stringer Ratings



Made By: CTG  
 Checked By: DWC

Date: 5/31/2012 Job No.: p402110046  
 Date: 6/7/2012

Stringer Ratings - As Built (coped stringers are simple span)

Stringers	Shape	Impact	RATING SUMMARY								
			SERVICE MOMENT (kip-ft)						RATING FACTOR - 4F1		
			DEAD LOAD			LIVE LOAD			M+	M-	
			Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Opr.	Opr.	
SECTION A	F1-1	Plate	1.3	156.25	---	---	186.70	13.50	---	2.77	---
	S1-1	W21x73	1.3	63.23	36.06	---	145.91	61.94	---	1.76	4.48
	S2-1	W21x73	1.3	66.34	30.80	---	158.11	73.23	---	1.61	3.85
	S3-1	W21x73	1.3	69.33	26.13	---	162.27	66.75	---	1.55	4.27
	S4-1	W21x73	1.3	70.10	24.59	---	163.94	64.14	---	1.53	4.47
	S5-1	W21x73	1.3	68.52	27.75	---	161.33	68.19	---	1.57	4.16
	S6-1	W21x73	1.3	64.44	34.60	---	157.51	74.05	---	1.62	3.76
	S7-1	W21x73	1.3	61.42	46.58	---	139.70	60.91	---	1.85	4.42
	F2-1	Plate	1.3	145.12	---	---	193.21	13.20	---	3.29	---
	F1-2	Plate	1.3	36.48	180.35	---	111.00	111.29	---	5.35	4.35
	S1-2	W21x73	1.3	38.98	99.68	---	138.89	87.21	---	1.98	2.62
	S2-2	W21x73	1.3	38.66	101.88	---	154.20	95.19	---	1.79	2.38
	S3-2	W21x73	1.3	39.31	100.93	---	157.57	85.67	---	1.75	2.66
	S4-2	W21x73	1.3	39.61	100.02	---	158.73	83.36	---	1.73	2.74
	S5-2	W21x73	1.3	39.48	100.41	---	156.75	88.09	---	1.75	2.59
	S6-2	W21x73	1.3	38.97	100.92	---	153.30	97.34	---	1.80	2.34
	S7-2	W21x73	1.3	41.26	102.01	---	133.45	84.71	---	2.05	2.68
	F2-2	Plate	1.3	13.38	168.33	---	98.56	130.23	---	7.50	4.76
	F1-3	Plate	1.3	102.90	---	---	117.36	---	---	4.49	---
	S1-3	W24x84	1.3	79.47	---	---	162.22	---	---	2.07	---
	S2-3	W24x84	1.3	80.94	---	---	181.30	---	---	1.85	---
S3-3	W24x84	1.3	82.54	---	---	182.62	---	---	1.83	---	
S4-3	W24x94	1.3	84.59	---	---	183.93	---	---	2.10	---	
S5-3	W24x94	1.3	85.57	---	---	185.49	---	---	2.08	---	
S6-3	W24x94	1.3	85.89	---	---	187.11	---	---	2.06	---	
S7-3	W24x94	1.3	89.96	---	---	182.43	---	---	2.09	---	
F2-3	Plate	1.3	76.47	---	---	110.13	---	---	5.77	---	

Lakefront Trestle - Stringer Ratings



Made By: C TG  
Checked By: DW C

Date: 5/31/2012 Job No.: p402110046  
Date: 6/7/2012

Stringer Ratings - As Built (coped stringers are simple span)

Stringers	Shape	Impact	RATING SUMMARY								
			SERVICE MOMENT (kip-ft)						RATING FACTOR - 4F1		
			DEAD LOAD			LIVE LOAD			M+	M-	
			Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Opr.	Opr.	
SECTION B	F1-4	Plate	1.3	102.87	---	---	116.99	---	---	4.35	---
	S1-4	W24x84	1.3	79.46	---	---	145.28	---	---	2.32	---
	S2-4	W24x84	1.3	80.94	---	---	173.02	---	---	1.94	---
	S3-4	W24x84	1.3	82.55	---	---	174.79	---	---	1.91	---
	S4-4	W24x94	1.3	84.59	---	---	176.57	---	---	2.19	---
	S5-4	W24x94	1.3	85.57	---	---	178.34	---	---	2.16	---
	S6-4	W24x94	1.3	85.90	---	---	180.11	---	---	2.14	---
	S7-4	W24x94	1.3	90.04	---	---	192.78	---	---	1.98	---
	F2-4	Plate	1.3	76.49	---	---	116.07	---	---	5.33	---
	F1A-5	Plate	1.3	107.31	---	---	121.84	---	---	4.60	---
	F1B-5	Plate	1.3	107.79	---	---	121.18	---	---	4.26	---
	S1-5	W18x76	1.3	81.50	---	---	161.93	---	---	1.40	---
	S2-5	W18x76	1.3	82.04	---	---	176.87	---	---	1.28	---
	S3-5	W18x76	1.3	57.55	50.27	---	150.85	64.58	---	1.62	3.88
	S4-5	W18x76	1.3	58.04	49.30	---	153.07	61.69	---	1.60	4.08
	S5-5	W18x76	1.3	57.51	50.39	---	150.84	66.92	---	1.62	3.74
	S6-5	W18x76	1.3	55.77	52.53	---	148.02	73.25	---	1.66	3.40
	S7-5	W18x76	1.3	55.77	58.64	---	151.31	72.72	---	1.63	3.36
	F2A-5	Plate	1.3	73.40	---	---	112.47	---	---	5.89	---
	F2B-5	Plate	1.3	73.21	---	---	107.74	---	---	5.87	---
	F1-6	Plate	1.3	90.14	---	---	107.81	---	---	4.14	---
	S1-6	W21x93	1.3	73.15	---	---	152.92	---	---	2.20	---
	S2-6	W21x93	1.3	76.77	---	---	172.53	---	---	1.93	---
	S3-6	W21x93	1.3	80.63	---	---	178.07	---	---	1.85	---
S4-6	W21x93	1.3	83.94	---	---	183.96	---	---	1.78	---	
S5-6	W21x101	1.3	88.25	---	---	188.58	---	---	2.02	---	
S6-6	W21x101	1.3	91.05	---	---	193.64	---	---	1.96	---	
S7-6	W21x101	1.3	97.94	---	---	195.55	---	---	1.91	---	
F2-6	Plate	1.3	84.13	---	---	119.78	---	---	4.90	---	

Lakefront Trestle - Stringer Ratings



Made By: CTG  
Checked By: DWC

Date: 5/31/2012 Job No.: p402110046  
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Stringer Ratings - As Built (coped stringers are simple span)

Stringers	Shape	Impact	RATING SUMMARY								
			SERVICE MOMENT (kip-ft)						RATING FACTOR - 4F1		
			DEAD LOAD			LIVE LOAD			M+	M-	
			Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Opr.	Opr.	
SECTION C	F1-7	Plate	1.3	64.19	---	---	86.50	---	---	6.39	---
	S1-7	W21x73	1.3	50.49	---	---	118.93	---	---	2.24	---
	S2-7	W21x73	1.3	53.43	---	---	135.48	---	---	1.95	---
	S3-7	W21x73	1.3	56.64	---	---	141.32	---	---	1.85	---
	S4-7	W21x83	1.3	60.11	---	---	142.60	---	---	2.12	---
	S5-7	W21x83	1.3	62.94	---	---	150.02	---	---	2.00	---
	S6-7	W21x83	1.3	65.27	---	---	153.28	---	---	1.94	---
	S7-7	W21x83	1.3	70.72	---	---	158.57	---	---	1.85	---
	F2-7	Plate	1.3	62.29	---	---	95.24	---	---	5.78	---
	F1A-8	Plate	1.3	76.65	---	---	97.85	---	---	5.30	---
	F1B-8	Plate	1.3	76.29	---	---	97.78	---	---	5.07	---
	F1C-8	Plate	1.3	88.15	---	---	106.10	---	---	4.36	---
	S1-8	W18x86	1.3	67.73	---	---	114.86	---	---	2.42	---
	S2-8	W18x97	1.3	69.30	---	---	133.92	---	---	2.40	---
	S3-8	W18x86	1.3	68.95	---	---	137.98	---	---	2.01	---
	S4-8	W18x86	1.3	68.94	---	---	133.42	---	---	2.08	---
	S5-8	W18x86	1.3	68.95	---	---	137.43	---	---	2.02	---
	S6-8	W18x86	1.3	68.35	---	---	132.92	---	---	2.09	---
	S7-8	W18x86	1.3	71.00	---	---	166.43	---	---	1.66	---
	F2A-8	Plate	1.3	51.57	---	---	93.54	---	---	5.65	---
	F2B-8	Plate	1.3	51.45	---	---	104.59	---	---	5.75	---
	F2C-8	Plate	1.3	59.44	---	---	120.98	---	---	4.74	---
	F1A-9	Plate	1.3	88.08	---	---	106.53	---	---	4.13	---
	F1B-9	Plate	1.3	89.16	---	---	105.41	---	---	3.63	---
	F1C-9	Plate	1.3	76.34	---	---	98.96	---	---	3.96	---
	S1-9	W18x97	1.3	69.64	---	---	133.23	---	---	2.41	---
	S2-9	W18x97	1.3	70.19	---	---	146.79	---	---	2.18	---
	S3-9	W18x97	1.3	70.79	---	---	145.84	---	---	2.19	---
	S4-9	W18x97	1.3	70.79	---	---	146.80	---	---	2.18	---
	S5-9	W18x86	1.3	69.82	---	---	145.06	---	---	1.91	---
S6-9	W18x97	1.3	70.19	---	---	147.04	---	---	2.18	---	
S7-9	W18x97	1.3	72.79	---	---	165.32	---	---	1.93	---	
F2A-9	Plate	1.3	59.33	---	---	116.59	---	---	4.73	---	
F2B-9	Plate	1.3	60.07	---	---	109.96	---	---	4.90	---	
F2C-9	Plate	1.3	51.21	---	---	84.48	---	---	6.32	---	
F1-10	Plate	1.3	63.62	---	---	95.55	---	---	4.62	---	
S1-10	W21x73	1.3	50.73	---	---	124.45	---	---	2.14	---	
S2-10	W21x73	1.3	53.56	---	---	130.57	---	---	2.02	---	
S3-10	W21x73	1.3	56.74	---	---	132.35	---	---	1.98	---	
S4-10	W21x83	1.3	60.18	---	---	138.63	---	---	2.18	---	
S5-10	W21x83	1.3	63.00	---	---	142.09	---	---	2.11	---	
S6-10	W21x83	1.3	65.30	---	---	146.71	---	---	2.03	---	
S7-10	W21x83	1.3	70.58	---	---	114.59	---	---	2.56	---	
F2-10	Plate	1.3	61.02	---	---	91.62	---	---	5.63	---	



**Lakefront Trestle - Stringer Ratings**



Made By: CTG  
 Checked By: DWC

Date: 5/31/2012 Job No.: p402110046  
 Date: 6/7/2012

**Stringer Ratings - As Built (coped stringers are simple span)**

Stringers	Shape	Impact	RATING SUMMARY								
			SERVICE MOMENT (kip-ft)						RATING FACTOR - 4F1		
			DEAD LOAD			LIVE LOAD			M+	M-	
			Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Opr.	Opr.	
SECTION D	F1-11	Plate	1.3	76.21	---	---	115.39	---	---	4.55	---
	S1-11	W18x86	1.3	51.09	---	---	128.40	---	---	2.27	---
	S2-11	W18x86	1.3	45.86	---	---	115.66	---	---	2.55	---
	S3-11	W18x86	1.3	40.69	---	---	107.92	---	---	2.77	---
	S4-11	W18x65	1.3	34.86	---	---	97.80	---	---	2.14	---
	S5-11	W18x65	1.3	30.43	---	---	88.77	---	---	2.40	---
	S6-11	W18x65	1.3	26.30	---	---	79.83	---	---	2.70	---
	S7-11	W18x65	1.3	23.33	---	---	42.16	---	---	5.17	---
	F2-11	Plate	1.3	18.23	---	---	37.85	---	---	14.49	---
	F1A-12	Plate	1.3	93.89	---	---	133.73	---	---	3.93	---
	F1B-12	Plate	1.3	95.35	---	---	133.26	---	---	4.08	---
	S1-12	W21x101	1.3	75.11	---	---	161.87	---	---	2.42	---
	S2-12	W21x101	1.3	75.42	---	---	159.22	---	---	2.46	---
	S3-12	W21x101	1.3	76.05	---	---	159.09	---	---	2.46	---
	S4-12	W21x101	1.3	76.05	---	---	159.28	---	---	2.45	---
	S5-12	W21x101	1.3	76.05	---	---	158.93	---	---	2.46	---
	S6-12	W21x101	1.3	75.42	---	---	159.69	---	---	2.45	---
	S7-12	W21x101	1.3	77.90	---	---	107.54	---	---	3.62	---
	F2A-12	Plate	1.3	62.68	---	---	90.32	---	---	5.69	---
	F2B-12	Plate	1.3	63.51	---	---	93.91	---	---	5.48	---
	F1-13	Plate	1.3	11.71	---	---	23.55	---	---	26.63	---
	S1-13	W18x55	1.3	13.77	---	---	44.05	---	---	4.27	---
	S2-13	W18x55	1.3	19.52	---	---	60.90	---	---	3.02	---
	S3-13	W18x55	1.3	26.17	---	---	74.61	---	---	2.39	---
S4-13	W18x71	1.3	34.50	---	---	93.71	---	---	2.48	---	
S5-13	W18x71	1.3	43.28	---	---	111.48	---	---	2.03	---	
S6-13	W18x86	1.3	54.11	---	---	125.04	---	---	2.31	---	
S7-13	W18x86	1.3	67.50	---	---	112.90	---	---	2.46	---	
F2-13	Plate	1.3	62.79	---	---	95.59	---	---	5.27	---	

Lakefront Trestle - Stringer Ratings



Made By: CTG  
 Checked By: DWC

Date: 5/31/2012 Job No.: p402110046  
 Date: 6/7/2012

Stringer Ratings - As Built (coped stringers are simple span)

Stringers	Shape	Impact	RATING SUMMARY								
			SERVICE MOMENT (kip-ft)						RATING FACTOR - 4F1		
			DEAD LOAD			LIVE LOAD			M+	M-	
			Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Opr.	Opr.	
SECTION E	F1-14	Plate	1.3	124.43	---	---	143.84	---	---	4.50	---
	S1-14	W24x94	1.3	96.55	---	---	191.14	---	---	1.97	---
	S2-14	W24x94	1.3	99.79	---	---	209.64	---	---	1.78	---
	S3-14	W24x94	1.3	103.29	---	---	215.36	---	---	1.72	---
	S4-14	W24x104	1.3	107.46	---	---	221.26	---	---	1.95	---
	S5-14	W24x104	1.3	110.37	---	---	226.71	---	---	1.89	---
	S6-14	W24x104	1.3	112.58	---	---	232.39	---	---	1.83	---
	S7-14	W24x104	1.3	119.63	---	---	208.42	---	---	2.02	---
	F2-14	Plate	1.3	99.99	---	---	136.82	---	---	3.80	---
	F1A-15	Plate	1.3	139.47	---	---	145.66	---	---	4.68	---
	F1B-15	Plate	1.3	139.41	---	---	144.96	---	---	5.03	---
	F1C-15	Plate	1.3	139.78	---	---	146.06	---	---	5.32	---
	S1-15	W21x111	1.3	107.38	---	---	178.23	---	---	2.32	---
	S2-15	W21x111	1.3	108.08	---	---	207.10	---	---	1.99	---
	S3-15	W21x101	1.3	107.49	---	---	206.86	---	---	1.77	---
	S4-15	W21x101	1.3	107.49	---	---	206.97	---	---	1.77	---
	S5-15	W21x101	1.3	107.48	---	---	207.20	---	---	1.77	---
	S6-15	W21x101	1.3	106.75	---	---	207.42	---	---	1.77	---
	S7-15	W21x101	1.3	110.68	---	---	222.11	---	---	1.64	---
	F2A-15	Plate	1.3	91.03	---	---	137.34	---	---	4.08	---
	F2B-15	Plate	1.3	91.23	---	---	149.20	---	---	3.34	---
	F2C-15	Plate	1.3	91.51	---	---	143.32	---	---	3.67	---
	F1-16	Plate	1.3	124.05	---	---	132.16	---	---	6.60	---
	S1-16	W24x94	1.3	95.23	---	---	148.98	---	---	2.53	---
	S2-16	W24x94	1.3	98.99	---	---	186.95	---	---	2.00	---
	S3-16	W24x94	1.3	102.83	---	---	191.69	---	---	1.94	---
	S4-16	W24x104	1.3	107.33	---	---	195.34	---	---	2.20	---
	S5-16	W24x104	1.3	110.60	---	---	199.29	---	---	2.15	---
S6-16	W24x104	1.3	113.18	---	---	203.71	---	---	2.09	---	
S7-16	W24x104	1.3	120.78	---	---	232.60	---	---	1.81	---	
F2-16	Plate	1.3	103.24	---	---	156.72	---	---	3.83	---	

Lakefront Trestle - Stringer Ratings



Made By: CTG  
 Checked By: DWC

Date: 5/31/2012 Job No.: p402110046  
 Date: 6/7/2012

Stringer Ratings - As Built (coped stringers are simple span)

Stringers	Shape	Impact	RATING SUMMARY								
			SERVICE MOMENT (kip-ft)						RATING FACTOR - 4F1		
			DEAD LOAD			LIVE LOAD			M+	M-	
			Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Opr.	Opr.	
SECTION F	F1-17	Plate	1.3	142.45	---	---	148.57	---	---	5.34	---
	S1-17	W24x104	1.3	111.70	---	---	166.81	---	---	2.56	---
	S2-17	W24x104	1.3	115.81	---	---	207.92	---	---	2.04	---
	S3-17	W24x104	1.3	119.98	---	---	212.09	---	---	1.98	---
	S4-17	W24x104	1.3	123.44	---	---	216.49	---	---	1.93	---
	S5-17	W24x117	1.3	128.99	---	---	220.62	---	---	2.18	---
	S6-17	W24x117	1.3	131.79	---	---	224.55	---	---	2.13	---
	S7-17	W24x117	1.3	140.27	---	---	259.91	---	---	1.82	---
	F2-17	Plate	1.3	118.36	---	---	169.44	---	---	3.76	---
	F1A-18	Plate	1.3	160.79	---	---	161.65	---	---	5.08	---
	F1B-18	Plate	1.3	161.59	---	---	160.86	---	---	5.78	---
	S1-18	W21x101	1.3	87.21	69.58	---	152.11	61.71	---	2.51	6.41
	S2-18	W21x101	1.3	89.35	66.96	---	177.52	83.92	---	2.14	4.74
	S3-18	W21x101	1.3	91.15	64.97	---	180.30	78.26	---	2.10	5.10
	S4-18	W21x101	1.3	91.38	64.46	---	181.85	76.75	---	2.08	5.21
	S5-18	W21x101	1.3	90.43	66.39	---	178.49	80.22	---	2.13	4.96
	S6-18	W21x101	1.3	88.07	69.54	---	176.73	84.21	---	2.16	4.70
	S7-18	W21x101	1.3	88.31	77.97	---	202.07	88.52	---	1.89	4.40
	F2A-18	Plate	1.3	106.16	---	---	158.02	---	---	3.86	---
	F2B-18	Plate	1.3	106.21	---	---	154.85	---	---	3.97	---
	F1-19	Plate	1.3	159.00	---	---	158.24	---	---	6.24	---
	S1-19	W24x104	1.3	120.70	---	---	211.35	---	---	1.99	---
	S2-19	W24x104	1.3	122.04	---	---	232.89	---	---	1.80	---
	S3-19	W24x104	1.3	122.04	---	---	128.27	---	---	3.27	---
	S4-19	W24x104	1.3	124.04	---	---	236.88	---	---	1.76	---
	S5-19	W24x104	1.3	124.65	---	---	238.31	---	---	1.75	---
	S6-19	W24x104	1.3	124.46	---	---	239.24	---	---	1.74	---
	S7-19	W24x104	1.3	129.51	---	---	236.46	---	---	1.75	---
F2-19	Plate	1.3	107.24	---	---	142.54	---	---	3.65	---	

Lakefront Trestle - Stringer Ratings



Made By: CTG  
 Checked By: DWC

Date: 5/31/2012 Job No.: p402110046  
 Date: 6/7/2012

Stringer Ratings - As Built (coped stringers are simple span)

Stringers	Shape	Impact	RATING SUMMARY								
			SERVICE MOMENT (kip-ft)						RATING FACTOR - 4F1		
			DEAD LOAD			LIVE LOAD			M+	M-	
			Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Opr.	Opr.	
SECTION G	F1-20	Plate	1.3	116.46	---	---	130.33	---	---	5.38	---
	S1-20	W21x101	1.3	90.48	---	---	180.38	---	---	2.10	---
	S2-20	W21x101	1.3	91.52	---	---	198.05	---	---	1.91	---
	S3-20	W21x101	1.3	92.73	---	---	198.96	---	---	1.90	---
	S4-20	W21x101	1.3	93.26	---	---	199.90	---	---	1.89	---
	S5-20	W21x101	1.3	93.78	---	---	200.79	---	---	1.88	---
	S6-20	W21x101	1.3	93.62	---	---	201.73	---	---	1.87	---
	S7-20	W21x101	1.3	97.45	---	---	176.67	---	---	2.12	---
	F2-20	Plate	1.3	80.53	---	---	116.09	---	---	4.99	---
	F1-21	Plate	1.3	190.72	---	---	198.60	50.79	---	3.30	---
	S1-21	W18x86	1.3	66.91	46.75	---	143.02	78.56	---	1.95	3.75
	S2-21	W18x86	1.3	65.78	50.06	---	153.94	89.27	---	1.82	3.27
	S3-21	W18x86	1.3	62.83	57.33	---	156.21	85.04	---	1.80	3.36
	S4-21	W18x86	1.3	57.40	68.19	---	155.66	86.09	---	1.84	3.23
	S5-21	W18x86	1.3	50.53	81.92	---	151.05	94.60	---	1.93	2.82
	S6-21	W18x86	1.3	43.00	95.63	---	145.34	105.58	---	2.04	2.43
	S7-21	W18x86	1.3	94.05	---	---	175.62	---	---	1.47	---
	F2-21	Plate	1.3	0.00	195.60	---	83.74	63.95	---	7.39	7.33
	F1-22	Plate	1.3	12.74	131.70	---	172.45	78.58	---	4.47	8.64
	S1-22	W16x77	1.3	28.69	60.69	---	109.19	59.58	---	2.24	3.69
	S2-22	W16x77	1.3	31.91	54.98	---	118.74	64.27	---	2.04	3.48
	S3-22	W16x77	1.3	36.50	46.95	---	121.73	53.43	---	1.96	4.31
S4-22	W16x77	1.3	39.92	40.10	---	123.28	50.33	---	1.91	4.68	
S5-22	W16x77	1.3	41.91	36.15	---	122.63	54.56	---	1.91	4.37	
S6-22	W16x77	1.3	42.17	34.28	---	121.39	64.72	---	1.93	3.71	
S7-22	W16x77	1.3	61.42	---	---	130.26	---	---	1.68	---	
F2-22	Plate	1.3	76.61	---	---	103.96	11.63	---	4.23	---	

Lakefront Trestle - Stringer Ratings



Made By: CTG  
 Checked By: DWC

Date: 5/31/2012 Job No.: p402110046  
 Date: 6/7/2012

Stringer Ratings - As Built (coped stringers are simple span)

Stringers	Shape	Impact	RATING SUMMARY								
			SERVICE MOMENT (kip-ft)						RATING FACTOR - 4F1		
			DEAD LOAD			LIVE LOAD			M+	M-	
			Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Opr.	Opr.	
SECTION H	F1-1	Plate	1.3	63.20	---	98.28	191.22	59.66	78.45	3.00	6.97
	S1-1	W16x67	1.3	33.38	28.34	50.15	93.92	49.13	56.62	2.18	3.39
	S2-1	W16x67	1.3	34.51	26.17	58.87	101.53	52.23	61.56	2.01	3.01
	S3-1	W16x67	1.3	34.51	26.17	63.62	104.18	45.82	53.49	1.96	3.40
	S4-1	W16x67	1.3	43.49	44.47	---	117.06	43.19	---	1.69	4.55
	S5-1	W16x67	1.3	43.50	51.24	---	117.07	50.25	---	1.69	3.81
	S6-1	W16x67	1.3	46.66	---	---	124.34	---	---	1.57	---
	S7-1	W16x67	1.3	48.43	---	---	107.21	---	---	1.81	---
	F2-1	Plate	1.3	5.33	137.09	96.06	76.43	49.13	45.76	6.17	7.54
	F1-2	Plate	1.3	89.87	58.61	---	141.03	47.77	26.29	3.50	11.40
	S1-2	W16x67	1.3	39.45	39.00	7.75	90.13	46.87	51.18	2.22	4.28
	S2-2	W16x67	1.3	43.78	40.96	---	96.89	51.25	56.64	2.03	3.89
	S3-2	W16x67	1.3	43.49	---	---	116.20	---	---	1.70	---
	S4-2	W16x67	1.3	43.49	---	---	116.20	---	---	1.70	---
	S5-2	W16x67	1.3	43.49	---	---	116.21	---	---	1.70	---
	S6-2	W16x67	1.3	43.49	---	---	116.22	---	---	1.70	---
	S7-2	W16x67	1.3	45.15	---	---	104.53	---	---	1.88	---
	F2-2	Plate	1.3	105.44	---	---	101.14	4.14	4.47	4.23	---
	F1-3	Plate	1.3	110.86	---	---	111.96	4.40	---	4.69	---
	S1-3	W16x67	1.3	33.25	13.24	---	86.77	47.35	---	2.36	4.66
	S2-3	W16x67	1.3	33.04	14.22	---	92.90	53.08	---	2.21	4.14
	S3-3	W16x67	1.3	40.02	---	---	113.39	---	---	1.76	---
	S4-3	W16x67	1.3	40.04	---	---	113.34	---	---	1.76	---
	S5-3	W16x67	1.3	40.04	---	---	113.40	---	---	1.76	---
	S6-3	W16x67	1.3	40.04	---	---	113.33	---	---	1.76	---
	S7-3	W16x67	1.3	41.55	---	---	99.28	---	---	2.00	---
	F2-3	Plate	1.3	9.58	67.49	---	79.11	28.02	---	6.34	16.30
	F1-4	Plate	1.3	7.65	146.84	160.68	103.48	66.79	59.52	5.74	7.29
S1-4	W16x67	1.3	46.42	---	---	117.44	---	---	1.66	---	
S2-4	W16x67	1.3	46.69	---	---	127.35	---	---	1.53	---	
S3-4	W16x67	1.3	46.65	---	---	127.23	---	---	1.53	---	
S4-4	W16x67	1.3	46.69	---	---	127.34	---	---	1.53	---	
S5-4	W16x67	1.3	46.66	---	---	127.26	---	---	1.53	---	
S6-4	W16x67	1.3	46.66	---	---	127.29	---	---	1.53	---	
S7-4	W16x67	1.3	48.45	---	---	111.28	---	---	1.74	---	
F2-4	Plate	1.3	41.79	62.17	62.28	106.07	43.20	29.04	4.49	10.67	

Lakefront Trestle - Stringer Ratings



Made By: CTG  
 Checked By: DWC

Date: 5/31/2012 Job No.: p402110046  
 Date: 6/7/2012

Stringer Ratings - As Built (coped stringers are simple span)

Stringers	Shape	Impact	RATING SUMMARY								
			SERVICE MOMENT (kip-ft)						RATING FACTOR - 5C1		
			DEAD LOAD			LIVE LOAD			M+	M-	
			Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Opr.	Opr.	
SECTION A	F1-1	Plate	1.3	156.25	---	---	158.27	7.59	---	3.27	---
	S1-1	W21x73	1.3	63.23	36.06	---	131.57	87.73	---	1.95	3.16
	S2-1	W21x73	1.3	66.34	30.80	---	142.58	102.11	---	1.78	2.76
	S3-1	W21x73	1.3	69.33	26.13	---	145.97	96.80	---	1.73	2.95
	S4-1	W21x73	1.3	70.10	24.59	---	147.32	94.33	---	1.71	3.04
	S5-1	W21x73	1.3	68.52	27.75	---	145.21	98.16	---	1.74	2.89
	S6-1	W21x73	1.3	64.44	34.60	---	142.19	103.02	---	1.80	2.71
	S7-1	W21x73	1.3	61.42	46.58	---	126.02	85.80	---	2.05	3.14
	F2-1	Plate	1.3	145.12	---	---	162.12	7.09	---	3.93	---
	F1-2	Plate	1.3	36.48	180.35	---	91.45	97.80	---	6.50	4.94
	S1-2	W21x73	1.3	38.98	99.68	---	124.83	114.97	---	2.21	1.99
	S2-2	W21x73	1.3	38.66	101.88	---	138.74	124.58	---	1.99	1.82
	S3-2	W21x73	1.3	39.31	100.93	---	140.60	121.06	---	1.96	1.88
	S4-2	W21x73	1.3	39.61	100.02	---	141.14	119.70	---	1.95	1.91
	S5-2	W21x73	1.3	39.48	100.41	---	140.08	122.09	---	1.96	1.87
	S6-2	W21x73	1.3	38.97	100.92	---	138.06	126.10	---	1.99	1.81
	S7-2	W21x73	1.3	41.26	102.01	---	119.83	111.04	---	2.28	2.04
	F2-2	Plate	1.3	13.38	168.33	---	78.93	113.85	---	9.36	5.44
	F1-3	Plate	1.3	102.90	---	---	103.21	---	---	5.11	---
	S1-3	W24x84	1.3	79.47	---	---	141.72	---	---	2.37	---
	S2-3	W24x84	1.3	80.94	---	---	158.78	---	---	2.11	---
S3-3	W24x84	1.3	82.54	---	---	160.78	---	---	2.08	---	
S4-3	W24x94	1.3	84.59	---	---	162.15	---	---	2.38	---	
S5-3	W24x94	1.3	85.57	---	---	163.50	---	---	2.36	---	
S6-3	W24x94	1.3	85.89	---	---	164.83	---	---	2.33	---	
S7-3	W24x94	1.3	89.96	---	---	160.77	---	---	2.37	---	
F2-3	Plate	1.3	76.47	---	---	96.93	---	---	6.56	---	

Lakefront Trestle - Stringer Ratings



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Date: 5/31/2012 Job No.: p402110046  
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Stringer Ratings - As Built (coped stringers are simple span)

Stringers	Shape	Impact	RATING SUMMARY								
			SERVICE MOMENT (kip-ft)						RATING FACTOR - 5C1		
			DEAD LOAD			LIVE LOAD			M+	M-	
			Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Opr.	Opr.	
SECTION B	F1-4	Plate	1.3	102.87	---	---	105.87	---	---	4.81	---
	S1-4	W24x84	1.3	79.46	---	---	129.79	---	---	2.59	---
	S2-4	W24x84	1.3	80.94	---	---	156.58	---	---	2.14	---
	S3-4	W24x84	1.3	82.55	---	---	158.73	---	---	2.11	---
	S4-4	W24x94	1.3	84.59	---	---	159.38	---	---	2.42	---
	S5-4	W24x94	1.3	85.57	---	---	159.63	---	---	2.41	---
	S6-4	W24x94	1.3	85.90	---	---	159.88	---	---	2.41	---
	S7-4	W24x94	1.3	90.04	---	---	170.81	---	---	2.23	---
	F2-4	Plate	1.3	76.49	---	---	103.68	---	---	5.96	---
	F1A-5	Plate	1.3	107.31	---	---	108.08	---	---	5.18	---
	F1B-5	Plate	1.3	107.79	---	---	107.85	---	---	4.79	---
	S1-5	W18x76	1.3	81.50	---	---	140.39	---	---	1.61	---
	S2-5	W18x76	1.3	82.04	---	---	157.69	---	---	1.43	---
	S3-5	W18x76	1.3	57.55	50.27	---	136.11	97.46	---	1.80	2.57
	S4-5	W18x76	1.3	58.04	49.30	---	139.73	94.88	---	1.75	2.65
	S5-5	W18x76	1.3	57.51	50.39	---	137.35	98.57	---	1.78	2.54
	S6-5	W18x76	1.3	55.77	52.53	---	133.91	101.49	---	1.84	2.45
	S7-5	W18x76	1.3	55.77	58.64	---	136.21	100.66	---	1.81	2.43
	F2A-5	Plate	1.3	73.40	---	---	98.50	---	---	6.72	---
	F2B-5	Plate	1.3	73.21	---	---	97.53	---	---	6.48	---
	F1-6	Plate	1.3	90.14	---	---	96.60	---	---	4.62	---
	S1-6	W21x93	1.3	73.15	---	---	133.83	---	---	2.51	---
	S2-6	W21x93	1.3	76.77	---	---	155.13	---	---	2.15	---
	S3-6	W21x93	1.3	80.63	---	---	159.50	---	---	2.07	---
	S4-6	W21x93	1.3	83.94	---	---	161.46	---	---	2.03	---
	S5-6	W21x101	1.3	88.25	---	---	163.94	---	---	2.33	---
	S6-6	W21x101	1.3	91.05	---	---	171.42	---	---	2.21	---
	S7-6	W21x101	1.3	97.94	---	---	174.57	---	---	2.14	---
F2-6	Plate	1.3	84.13	---	---	105.20	---	---	5.58	---	

Lakefront Trestle - Stringer Ratings



Made By: CTG  
 Checked By: DWC

Date: 5/31/2012 Job No.: p402110046  
 Date: 6/7/2012

Stringer Ratings - As Built (coped stringers are simple span)

Stringers	Shape	Impact	RATING SUMMARY								
			SERVICE MOMENT (kip-ft)						RATING FACTOR - 5C1		
			DEAD LOAD			LIVE LOAD			M+	M-	
			Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Opr.	Opr.	
SECTION C	F1-7	Plate	1.3	64.19	---	---	76.96	---	---	7.18	---
	S1-7	W21x73	1.3	50.49	---	---	105.80	---	---	2.52	---
	S2-7	W21x73	1.3	53.43	---	---	121.60	---	---	2.17	---
	S3-7	W21x73	1.3	56.64	---	---	124.87	---	---	2.10	---
	S4-7	W21x83	1.3	60.11	---	---	128.65	---	---	2.35	---
	S5-7	W21x83	1.3	62.94	---	---	131.69	---	---	2.27	---
	S6-7	W21x83	1.3	65.27	---	---	134.96	---	---	2.21	---
	S7-7	W21x83	1.3	70.72	---	---	143.23	---	---	2.05	---
	F2-7	Plate	1.3	62.29	---	---	86.31	---	---	6.38	---
	F1A-8	Plate	1.3	76.65	---	---	85.24	---	---	6.09	---
	F1B-8	Plate	1.3	76.29	---	---	85.11	---	---	5.82	---
	F1C-8	Plate	1.3	88.15	---	---	94.69	---	---	4.89	---
	S1-8	W18x86	1.3	67.73	---	---	101.89	---	---	2.73	---
	S2-8	W18x97	1.3	69.30	---	---	120.68	---	---	2.66	---
	S3-8	W18x86	1.3	68.95	---	---	121.73	---	---	2.28	---
	S4-8	W18x86	1.3	68.94	---	---	120.75	---	---	2.30	---
	S5-8	W18x86	1.3	68.95	---	---	121.42	---	---	2.28	---
	S6-8	W18x86	1.3	68.35	---	---	120.45	---	---	2.30	---
	S7-8	W18x86	1.3	71.00	---	---	145.81	---	---	1.89	---
	F2A-8	Plate	1.3	51.57	---	---	82.50	---	---	6.41	---
	F2B-8	Plate	1.3	51.45	---	---	92.75	---	---	6.49	---
	F2C-8	Plate	1.3	59.44	---	---	105.55	---	---	5.43	---
	F1A-9	Plate	1.3	88.08	---	---	93.04	---	---	4.73	---
	F1B-9	Plate	1.3	89.16	---	---	94.81	---	---	4.03	---
	F1C-9	Plate	1.3	76.34	---	---	86.75	---	---	4.52	---
	S1-9	W18x97	1.3	69.64	---	---	120.95	---	---	2.65	---
	S2-9	W18x97	1.3	70.19	---	---	131.93	---	---	2.43	---
	S3-9	W18x97	1.3	70.79	---	---	132.16	---	---	2.42	---
	S4-9	W18x97	1.3	70.79	---	---	131.78	---	---	2.43	---
	S5-9	W18x86	1.3	69.82	---	---	131.97	---	---	2.09	---
S6-9	W18x97	1.3	70.19	---	---	131.66	---	---	2.43	---	
S7-9	W18x97	1.3	72.79	---	---	146.59	---	---	2.17	---	
F2A-9	Plate	1.3	59.33	---	---	104.91	---	---	5.25	---	
F2B-9	Plate	1.3	60.07	---	---	95.91	---	---	5.61	---	
F2C-9	Plate	1.3	51.21	---	---	74.81	---	---	7.14	---	
F1-10	Plate	1.3	63.62	---	---	87.57	---	---	5.04	---	
S1-10	W21x73	1.3	50.73	---	---	112.57	---	---	2.37	---	
S2-10	W21x73	1.3	53.56	---	---	116.30	---	---	2.27	---	
S3-10	W21x73	1.3	56.74	---	---	119.74	---	---	2.19	---	
S4-10	W21x83	1.3	60.18	---	---	123.23	---	---	2.45	---	
S5-10	W21x83	1.3	63.00	---	---	126.99	---	---	2.36	---	
S6-10	W21x83	1.3	65.30	---	---	130.17	---	---	2.29	---	
S7-10	W21x83	1.3	70.58	---	---	102.35	---	---	2.87	---	
F2-10	Plate	1.3	61.02	---	---	82.15	---	---	6.28	---	



Lakefront Trestle - Stringer Ratings



Made By: CTG  
 Checked By: DWC

Date: 5/31/2012 Job No.: p402110046  
 Date: 6/7/2012

Stringer Ratings - As Built (coped stringers are simple span)

Stringers	Shape	Impact	RATING SUMMARY								
			SERVICE MOMENT (kip-ft)						RATING FACTOR - 5C1		
			DEAD LOAD			LIVE LOAD			M+	M-	
			Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Opr.	Opr.	
SECTION D	F1-11	Plate	1.3	76.21	---	---	102.86	---	---	5.11	---
	S1-11	W18x86	1.3	51.09	---	---	114.86	---	---	2.53	---
	S2-11	W18x86	1.3	45.86	---	---	105.54	---	---	2.79	---
	S3-11	W18x86	1.3	40.69	---	---	98.08	---	---	3.05	---
	S4-11	W18x65	1.3	34.86	---	---	90.56	---	---	2.31	---
	S5-11	W18x65	1.3	30.43	---	---	83.08	---	---	2.56	---
	S6-11	W18x65	1.3	26.30	---	---	75.55	---	---	2.86	---
	S7-11	W18x65	1.3	23.33	---	---	41.93	---	---	5.20	---
	F2-11	Plate	1.3	18.23	---	---	36.36	---	---	15.08	---
	F1A-12	Plate	1.3	93.89	---	---	115.99	---	---	4.53	---
	F1B-12	Plate	1.3	95.35	---	---	115.71	---	---	4.70	---
	S1-12	W21x101	1.3	75.11	---	---	144.31	---	---	2.71	---
	S2-12	W21x101	1.3	75.42	---	---	142.04	---	---	2.75	---
	S3-12	W21x101	1.3	76.05	---	---	141.18	---	---	2.77	---
	S4-12	W21x101	1.3	76.05	---	---	141.15	---	---	2.77	---
	S5-12	W21x101	1.3	76.05	---	---	141.56	---	---	2.76	---
	S6-12	W21x101	1.3	75.42	---	---	142.74	---	---	2.74	---
	S7-12	W21x101	1.3	77.90	---	---	95.40	---	---	4.08	---
	F2A-12	Plate	1.3	62.68	---	---	79.57	---	---	6.46	---
	F2B-12	Plate	1.3	63.51	---	---	83.36	---	---	6.17	---
	F1-13	Plate	1.3	11.71	---	---	27.79	---	---	22.57	---
	S1-13	W18x55	1.3	13.77	---	---	47.78	---	---	3.94	---
	S2-13	W18x55	1.3	19.52	---	---	60.73	---	---	3.03	---
	S3-13	W18x55	1.3	26.17	---	---	74.25	---	---	2.41	---
S4-13	W18x71	1.3	34.50	---	---	87.71	---	---	2.65	---	
S5-13	W18x71	1.3	43.28	---	---	101.27	---	---	2.23	---	
S6-13	W18x86	1.3	54.11	---	---	114.81	---	---	2.51	---	
S7-13	W18x86	1.3	67.50	---	---	100.65	---	---	2.76	---	
F2-13	Plate	1.3	62.79	---	---	86.69	---	---	5.81	---	

Lakefront Trestle - Stringer Ratings



Made By: CTG  
 Checked By: DWC

Date: 5/31/2012 Job No.: p402110046  
 Date: 6/7/2012

Stringer Ratings - As Built (coped stringers are simple span)

Stringers	Shape	Impact	RATING SUMMARY								
			SERVICE MOMENT (kip-ft)						RATING FACTOR - 5C1		
			DEAD LOAD			LIVE LOAD			M+	M-	
			Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Opr.	Opr.	
SECTION E	F1-14	Plate	1.3	124.43	---	---	128.39	---	---	5.05	---
	S1-14	W24x94	1.3	96.55	---	---	168.32	---	---	2.24	---
	S2-14	W24x94	1.3	99.79	---	---	184.58	---	---	2.03	---
	S3-14	W24x94	1.3	103.29	---	---	189.39	---	---	1.96	---
	S4-14	W24x104	1.3	107.46	---	---	194.17	---	---	2.22	---
	S5-14	W24x104	1.3	110.37	---	---	199.16	---	---	2.15	---
	S6-14	W24x104	1.3	112.58	---	---	204.04	---	---	2.09	---
	S7-14	W24x104	1.3	119.63	---	---	182.39	---	---	2.31	---
	F2-14	Plate	1.3	99.99	---	---	121.08	---	---	4.29	---
	F1A-15	Plate	1.3	139.47	---	---	128.38	---	---	5.32	---
	F1B-15	Plate	1.3	139.41	---	---	130.67	---	---	5.58	---
	F1C-15	Plate	1.3	139.78	---	---	125.81	---	---	6.17	---
	S1-15	W21x111	1.3	107.38	---	---	154.98	---	---	2.66	---
	S2-15	W21x111	1.3	108.08	---	---	181.49	---	---	2.27	---
	S3-15	W21x101	1.3	107.49	---	---	180.76	---	---	2.03	---
	S4-15	W21x101	1.3	107.49	---	---	182.82	---	---	2.00	---
	S5-15	W21x101	1.3	107.48	---	---	182.69	---	---	2.01	---
	S6-15	W21x101	1.3	106.75	---	---	181.82	---	---	2.02	---
	S7-15	W21x101	1.3	110.68	---	---	194.63	---	---	1.87	---
	F2A-15	Plate	1.3	91.03	---	---	118.88	---	---	4.72	---
	F2B-15	Plate	1.3	91.23	---	---	133.02	---	---	3.74	---
	F2C-15	Plate	1.3	91.51	---	---	124.43	---	---	4.23	---
	F1-16	Plate	1.3	124.05	---	---	120.02	---	---	7.27	---
	S1-16	W24x94	1.3	95.23	---	---	129.32	---	---	2.92	---
S2-16	W24x94	1.3	98.99	---	---	164.35	---	---	2.28	---	
S3-16	W24x94	1.3	102.83	---	---	168.59	---	---	2.21	---	
S4-16	W24x104	1.3	107.33	---	---	169.24	---	---	2.54	---	
S5-16	W24x104	1.3	110.60	---	---	171.50	---	---	2.50	---	
S6-16	W24x104	1.3	113.18	---	---	177.76	---	---	2.40	---	
S7-16	W24x104	1.3	120.78	---	---	202.85	---	---	2.07	---	
F2-16	Plate	1.3	103.24	---	---	136.87	---	---	4.38	---	

Lakefront Trestle - Stringer Ratings



Made By: CTG  
 Checked By: DWC

Date: 5/31/2012 Job No.: p402110046  
 Date: 6/7/2012

Stringer Ratings - As Built (coped stringers are simple span)

Stringers	Shape	Impact	RATING SUMMARY								
			SERVICE MOMENT (kip-ft)						RATING FACTOR - 5C1		
			DEAD LOAD			LIVE LOAD			M+	M-	
			Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Opr.	Opr.	
SECTION F	F1-17	Plate	1.3	142.45	---	---	130.28	---	---	6.09	---
	S1-17	W24x104	1.3	111.70	---	---	146.01	---	---	2.93	---
	S2-17	W24x104	1.3	115.81	---	---	178.60	---	---	2.37	---
	S3-17	W24x104	1.3	119.98	---	---	186.66	---	---	2.25	---
	S4-17	W24x104	1.3	123.44	---	---	186.03	---	---	2.25	---
	S5-17	W24x117	1.3	128.99	---	---	191.05	---	---	2.52	---
	S6-17	W24x117	1.3	131.79	---	---	196.23	---	---	2.44	---
	S7-17	W24x117	1.3	140.27	---	---	224.32	---	---	2.11	---
	F2-17	Plate	1.3	118.36	---	---	151.01	---	---	4.22	---
	F1A-18	Plate	1.3	160.79	---	---	140.65	---	---	5.84	---
	F1B-18	Plate	1.3	161.59	---	---	140.52	---	---	6.62	---
	S1-18	W21x101	1.3	87.21	69.58	---	131.00	94.86	---	2.92	4.17
	S2-18	W21x101	1.3	89.35	66.96	---	154.84	127.80	---	2.46	3.11
	S3-18	W21x101	1.3	91.15	64.97	---	157.64	122.05	---	2.40	3.27
	S4-18	W21x101	1.3	91.38	64.46	---	158.75	118.85	---	2.39	3.36
	S5-18	W21x101	1.3	90.43	66.39	---	157.16	124.99	---	2.42	3.18
	S6-18	W21x101	1.3	88.07	69.54	---	155.70	127.90	---	2.45	3.09
	S7-18	W21x101	1.3	88.31	77.97	---	178.98	135.75	---	2.13	2.87
	F2A-18	Plate	1.3	106.16	---	---	150.85	---	---	4.04	---
	F2B-18	Plate	1.3	106.21	---	---	136.35	---	---	4.51	---
	F1-19	Plate	1.3	159.00	---	---	138.29	---	---	7.14	---
	S1-19	W24x104	1.3	120.70	---	---	185.74	---	---	2.26	---
	S2-19	W24x104	1.3	122.04	---	---	203.41	---	---	2.06	---
	S3-19	W24x104	1.3	122.04	---	---	113.66	---	---	3.69	---
	S4-19	W24x104	1.3	124.04	---	---	205.45	---	---	2.03	---
	S5-19	W24x104	1.3	124.65	---	---	206.58	---	---	2.02	---
	S6-19	W24x104	1.3	124.46	---	---	207.73	---	---	2.01	---
S7-19	W24x104	1.3	129.51	---	---	207.40	---	---	1.99	---	
F2-19	Plate	1.3	107.24	---	---	125.20	---	---	4.16	---	

Lakefront Trestle - Stringer Ratings



Made By: C TG  
 Checked By: DW C

Date: 5/31/2012 Job No.: p402110046  
 Date: 6/7/2012

Stringer Ratings - As Built (coped stringers are simple span)

Stringers	Shape	Impact	RATING SUMMARY								
			SERVICE MOMENT (kip-ft)						RATING FACTOR - 5C1		
			DEAD LOAD			LIVE LOAD			M+	M-	
			Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Opr.	Opr.	
SECTION G	F1-20	Plate	1.3	116.46	---	---	113.67	---	---	6.17	---
	S1-20	W21x101	1.3	90.48	---	---	158.17	---	---	2.40	---
	S2-20	W21x101	1.3	91.52	---	---	169.86	---	---	2.23	---
	S3-20	W21x101	1.3	92.73	---	---	170.53	---	---	2.22	---
	S4-20	W21x101	1.3	93.26	---	---	171.23	---	---	2.20	---
	S5-20	W21x101	1.3	93.78	---	---	171.99	---	---	2.19	---
	S6-20	W21x101	1.3	93.62	---	---	172.94	---	---	2.18	---
	S7-20	W21x101	1.3	97.45	---	---	156.59	---	---	2.39	---
	F2-20	Plate	1.3	80.53	---	---	103.86	---	---	5.57	---
	F1-21	Plate	1.3	190.72	---	---	154.53	44.45	---	4.24	---
	S1-21	W18x86	1.3	66.91	46.75	---	121.76	81.10	---	2.29	3.63
	S2-21	W18x86	1.3	65.78	50.06	---	129.86	92.75	---	2.15	3.14
	S3-21	W18x86	1.3	62.83	57.33	---	130.53	94.39	---	2.16	3.03
	S4-21	W18x86	1.3	57.40	68.19	---	129.64	99.05	---	2.21	2.80
	S5-21	W18x86	1.3	50.53	81.92	---	126.72	106.13	---	2.30	2.52
	S6-21	W18x86	1.3	43.00	95.63	---	123.19	112.97	---	2.41	2.27
	S7-21	W18x86	1.3	94.05	---	---	156.52	---	---	1.65	---
	F2-21	Plate	1.3	0.00	195.60	---	69.41	94.05	---	8.92	4.98
	F1-22	Plate	1.3	12.74	131.70	---	144.67	92.96	---	5.32	7.30
	S1-22	W16x77	1.3	28.69	60.69	---	96.32	64.16	---	2.54	3.42
	S2-22	W16x77	1.3	31.91	54.98	---	102.92	70.33	---	2.35	3.18
	S3-22	W16x77	1.3	36.50	46.95	---	107.25	67.43	---	2.22	3.41
S4-22	W16x77	1.3	39.92	40.10	---	108.93	65.51	---	2.16	3.59	
S5-22	W16x77	1.3	41.91	36.15	---	107.86	64.95	---	2.17	3.67	
S6-22	W16x77	1.3	42.17	34.28	---	107.00	63.95	---	2.19	3.75	
S7-22	W16x77	1.3	61.42	---	---	115.03	---	---	1.90	---	
F2-22	Plate	1.3	76.61	---	---	90.87	8.32	---	4.84	---	

Lakefront Trestle - Stringer Ratings



Made By: CTG  
 Checked By: DWC

Date: 5/31/2012 Job No.: p402110046  
 Date: 6/7/2012

Stringer Ratings - As Built (coped stringers are simple span)

Stringers	Shape	Impact	RATING SUMMARY								
			SERVICE MOMENT (kip-ft)						RATING FACTOR - 5C1		
			DEAD LOAD			LIVE LOAD			M+	M-	
			Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Mu+	Mu- 1 <sup>st</sup> Interior Support	Mu- 2 <sup>nd</sup> Interior Support	Opr.	Opr.	
SECTION H	F1-1	Plate	1.3	63.20	---	98.28	154.84	77.18	104.50	3.71	5.23
	S1-1	W16x67	1.3	33.38	28.34	50.15	87.57	43.07	55.01	2.34	3.49
	S2-1	W16x67	1.3	34.51	26.17	58.87	91.85	46.03	57.92	2.22	3.20
	S3-1	W16x67	1.3	34.51	26.17	63.62	92.84	41.23	50.84	2.20	3.58
	S4-1	W16x67	1.3	43.49	44.47	---	108.62	43.22	---	1.82	4.55
	S5-1	W16x67	1.3	43.50	51.24	---	108.63	49.64	---	1.82	3.85
	S6-1	W16x67	1.3	46.66	---	---	112.77	---	---	1.73	---
	S7-1	W16x67	1.3	48.43	---	---	98.60	---	---	1.96	---
	F2-1	Plate	1.3	5.33	137.09	96.06	66.96	64.49	57.96	7.05	5.75
	F1-2	Plate	1.3	89.87	58.61	---	129.37	54.84	26.02	3.82	9.93
	S1-2	W16x67	1.3	39.45	39.00	7.75	89.32	45.16	41.51	2.24	4.45
	S2-2	W16x67	1.3	43.78	40.96	---	93.79	49.31	47.25	2.10	4.04
	S3-2	W16x67	1.3	43.49	---	---	108.66	---	---	1.82	---
	S4-2	W16x67	1.3	43.49	---	---	108.67	---	---	1.82	---
	S5-2	W16x67	1.3	43.49	---	---	108.67	---	---	1.82	---
	S6-2	W16x67	1.3	43.49	---	---	108.68	---	---	1.82	---
	S7-2	W16x67	1.3	45.15	---	---	94.54	---	---	2.07	---
	F2-2	Plate	1.3	105.44	---	---	96.78	3.36	3.83	4.42	---
	F1-3	Plate	1.3	110.86	---	---	98.19	6.13	---	5.35	---
	S1-3	W16x67	1.3	33.25	13.24	---	82.35	44.48	---	2.49	4.96
	S2-3	W16x67	1.3	33.04	14.22	---	85.55	48.75	---	2.40	4.51
	S3-3	W16x67	1.3	40.02	---	---	101.99	---	---	1.96	---
	S4-3	W16x67	1.3	40.04	---	---	101.96	---	---	1.96	---
	S5-3	W16x67	1.3	40.04	---	---	101.99	---	---	1.96	---
	S6-3	W16x67	1.3	40.04	---	---	101.97	---	---	1.96	---
	S7-3	W16x67	1.3	41.55	---	---	90.34	---	---	2.20	---
	F2-3	Plate	1.3	9.58	67.49	---	65.06	31.79	---	7.70	14.37
	F1-4	Plate	1.3	7.65	146.84	160.68	89.51	79.17	79.09	6.64	6.02
S1-4	W16x67	1.3	46.42	---	---	107.53	---	---	1.81	---	
S2-4	W16x67	1.3	46.69	---	---	113.55	---	---	1.72	---	
S3-4	W16x67	1.3	46.65	---	---	113.47	---	---	1.72	---	
S4-4	W16x67	1.3	46.69	---	---	113.54	---	---	1.72	---	
S5-4	W16x67	1.3	46.66	---	---	113.50	---	---	1.72	---	
S6-4	W16x67	1.3	46.66	---	---	113.51	---	---	1.72	---	
S7-4	W16x67	1.3	48.45	---	---	99.31	---	---	1.95	---	
F2-4	Plate	1.3	41.79	62.17	62.28	101.06	56.25	36.55	4.71	8.19	



Made By: CTG  
Checked By: DMP

Date: 4/12/2012  
Date: 4/13/2012

Job No.: P402110046

**Lakefront Trestle- Stringer Fatigue Summary**

Redundant? Yes →  $f = 2.0$  (Calculate MEAN Life per ODOT BDM 402.2.6)  
 $R_s = 0.96$   
 Past ADTT ( $T_p$ ) = 257 →  $T_N = 580$  (Future ADTT, assuming growth rate of %1/year)  
 Weight Ratios = 1.0 ( $W_p/W, W_w/W$ )  
 Impact\* = 1.15 (Per ODOT BDM 402.2.6)  
 $F_{s3} = 0.96$   
 $Y_P = 18$  (Present age of the bridge in years)  $Y_{f,MIN} = 10$  years

\* Impact is applied in calculation of stress range,  $S_r$ . Do not include in service moment range.

**Stringer Rating - As Built**

Stringers	Section Modulus (in <sup>3</sup> )	SERVICE LOAD		FATIGUE						
		Moment Range		Sr (ksi)	C (Cycles per truck)	Category	K (Detail Constant)	Y <sub>f</sub> (years)	Y <sub>N</sub> (years)	Y <sub>f</sub> (years)
		S <sub>x</sub>	M <sub>LL</sub> (k-ft)							
SECTION A	S1-1	151.00	118.08	10.79	1.00	C	12	83.99	37.21	29.23
	S2-1	151.00	142.74	13.05	1.00	C	12	47.55	21.06	13.09
	S3-1	151.00	140.92	12.88	1.00	C	12	49.41	21.89	13.92
	S4-1	151.00	139.19	12.72	1.00	C	12	51.28	22.72	14.74
	S5-1	151.00	139.91	12.79	1.00	C	12	50.49	22.37	14.39
	S6-1	151.00	142.29	13.00	1.00	C	12	48.00	21.26	13.29
	S7-1	151.00	39.02	3.57	1.00	C	12	2327.53	1031.09	1023.12
	S1-2	151.00	126.7	11.58	1.00	C	12	67.99	30.12	22.14
	S2-2	151.00	149.12	13.63	1.00	C	12	41.70	18.47	10.50
	S3-2	151.00	147.17	13.45	1.00	C	12	43.38	19.22	11.24
	S4-2	151.00	145.71	13.32	1.00	C	12	44.70	19.80	11.83
	S5-2	151.00	146.38	13.38	1.00	C	12	44.09	19.53	11.56
	S6-2	151.00	148.44	13.57	1.00	C	12	42.28	18.73	10.75
S7-2	151.00	44.56	4.07	1.00	C	12	1562.87	692.35	684.37	
SECTION B	S1-5	146.00	108.81	10.28	1.00	C	12	97.02	42.98	35.01
	S2-5	146.00	139.34	13.17	1.00	C	12	46.20	20.47	12.49
	S3-5	146.00	142.31	13.45	1.00	C	12	43.37	19.21	11.24
	S4-5	146.00	139.01	13.14	1.00	C	12	46.53	20.61	12.64
	S5-5	146.00	139.97	13.23	1.00	C	12	45.58	20.19	12.22
	S6-5	146.00	143.61	13.57	1.00	C	12	42.20	18.70	10.72
	S7-5	146.00	55.11	5.21	1.00	C	12	746.78	330.82	322.85
SECTION G	S1-21	166.00	120.63	10.03	1.00	C	12	104.66	46.36	38.39
	S2-21	166.00	140.39	11.67	1.00	C	12	66.40	29.41	21.44
	S3-21	166.00	139.6	11.61	1.00	C	12	67.53	29.92	21.94
	S4-21	166.00	139.58	11.60	1.00	C	12	67.56	29.93	21.95
	S5-21	166.00	141.25	11.74	1.00	C	12	65.19	28.88	20.91
	S6-21	166.00	143.63	11.94	1.00	C	12	62.00	27.47	19.49
	S7-21	166.00	42.61	3.54	1.00	C	12	2374.74	1052.00	1044.03
	S1-22	134.00	95.76	9.86	1.00	C	12	110.05	48.75	40.78
	S2-22	134.00	109.65	11.29	1.00	C	12	73.30	32.47	24.50
	S3-22	134.00	108.22	11.15	1.00	C	12	76.25	33.78	25.80
	S4-22	134.00	106.94	11.01	1.00	C	12	79.02	35.00	27.03
	S5-22	134.00	107.13	11.03	1.00	C	12	78.60	34.82	26.84
	S6-22	134.00	108.18	11.14	1.00	C	12	76.33	33.81	25.84
	S7-22	134.00	29.27	3.01	1.00	C	12	3853.66	1707.16	1699.19

### STRINGER FATIGUE

- Fascia Stringers will not control because  $S_x$  is much higher than interior stringers and  $S_r$  is cubed in the denominator of the fatigue formula, also fascia do not have a detail category less than C
- Maximize Moment + Minimize  $S_x$  for Worst category to maximize  $S_r^3$
- Coped Stringer locations  $\rightarrow$  Cat. B, do not see a large moment range
- Sorting out Moment Ranges use STAAD Output the following units interior stringers control
  - UNIT 1
  - UNIT 2
  - UNIT 5
  - UNIT 21
  - UNIT 22

- SECTION H Stringers will not control because they are Category B

Worst case is C @ welded stiffener

2010 CUYAHOGA COUNTY 1  
AVERAGE 24-HR TRAFFIC VOLUME

SECT. BEGINS	TRAFFIC SECTION	SECT. LENGTH	PASS & A COM'L	B & C COM'L	TOTAL VEH.
SR-2					
U 00.00	LORAIN CO. LINE W. CORP. WESTLAKE	5.77	SEE PREFERRED ROUTE		
U 05.77	IR 90 ENTER RAMP	.14	6330	130	6460
U 05.91	SR 254 ENTER DETROIT RD.	.06	13380	420	13800
U 05.97	IR 90	1.14	13380	420	13800
U 07.11	SR 254DA (DETROIT RD.)	.20	4040	50	4090
U 07.31	US 6ALT. (RAMP FROM US 6)	.12	1780	20	1800
U 07.43	US 6 ENTER LAKE RD.	6.91	SEE PREFERRED ROUTE		
U 14.34	US 6 (APPROACH TO SUPERIOR) IN CLEVELND	.07	29560	100	29660
U 14.41	W. 28TH. ST.	1.08	32160	260	32420
U 15.49	FRONT AVE.	.43	29970	400	30370
U 15.92	E. 9TH. ST.	.86	37200	570	37770
U 16.78	RAMPS TO MARGINAL DR.	.69	26540	180	26720
U 17.47	IR 90	10.80	SEE PREFERRED ROUTE		
U 28.27	IR 90 IN EUCLID	.61	68250	3170	71420
28.88	EQUALS STA. 0.00 IN LAKE CO.	.00			
SR-3					
U 00.00	MEDINA CO. LINE S. CORP. N. ROYALTON	1.98	6000	230	6230
U 01.98	OHIO TURNPIKE	.74	6000	230	6230
U 02.72	SR 82 (ROYALTON RD.)	.16	7360	280	7640
U 02.88	BENNETT RD.	.69	13590	360	13950
U 03.57	WALLINGS RD.	1.73	10410	180	10590
U 05.30	S. CORP. PARMA	.95	10410	180	10590
U 06.25	PLEASANT VALLEY RD.	1.42	25430	440	25870
U 07.67	RIDGEWOOD DR.	1.98	23290	400	23690
U 09.65	US 42	7.07	SEE PREFERRED ROUTE		
16.72	RTE ENDS AT PUBLIC SQ. E. IN CLEVELND	.00			
US-6					
U 00.00	LORAIN CO. LINE W. CORP. BAY VILLAGE	.65	8180	140	8320
U 00.65	BRADLEY RD.	3.20	10740	180	10920
U 03.85	SR 252 (COLUMBIA RD.)	1.48	9510	160	9670
U 05.33	W. CORP. ROCKY RIVER	1.86	9510	160	9670
U 07.19	US 6ALT. (RAMP TO LAKE RD.)	.12	7280	120	7400
U 07.31	SR 2	.25	10610	190	10800
U 07.56	W. CORP. LAKEWOOD	.12	10610	190	10800
U 07.68	LAKE AVE.	.49	11740	150	11890
U 08.17	US 20 ENTER CLIFTON BLVD.	2.83	15140	190	15330
U 11.00	W. CORP. CLEVELAND W. 117TH. ST.	1.06	15140	190	15330
U 12.06	CLIFTON BLVD. ENTER BALTIC RD.	.14	22390	120	22510
U 12.20	BALTIC RD. ENT. MEMORIAL SHOREWAY	.80	35060	190	35250

SECTION FALLS BTWN  
∴ USE HIGHER VALUE  
570 x .45 = 256.5





Made By CTG  
Checked By DMP

Date 3/16/2012  
Date 3/22/2012

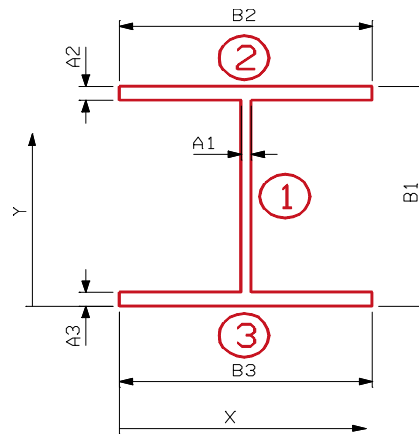
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 43.5625$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F1-1**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		15.7734	21.7813	343.5652	2325.6013	0.0000	0.0000	2325.6013
2	Top Flange		6.0000	43.1875	259.1250	0.2813	21.4063	2749.3652	2749.6465
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	21.4063	2749.3652	2749.6465
<b>Total</b>			<b>27.77</b>		<b>604.94</b>	<b>2326.16</b>		<b>5498.73</b>	<b>7824.89</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	21.7813	in	$S_{top} = 359.25$	$in^3$	y-bar =	21.7813	in	$S_{top} = 359.25$	$in^3$		
$I_x =$	7824.89	$n^4$	$S_{bott.} = 359.25$	$in^3$	$I_x =$	7824.89	$n^4$	$S_{bott.} = 359.25$	$in^3$		
$C_{top} =$	21.7813	in	A =	27.7734	$in^2$	$C_{top} =$	21.7813	in	A =	27.7734	$in^2$
$C_{bottom} =$	21.7813	in	$r_x =$	16.7851	in	$C_{bottom} =$	21.7813	in	$r_x =$	16.7851	in
J =	2.9894	$in^4$	Z =	422.74	$in^3$	J =	2.9894	$in^4$	Z =	422.74	$in^3$



Made By CTG  
Checked By DMP

Date 3/16/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	15.7734	4.0000	63.0938	0.1848	0.0000	0.0000	0.1848
2	Top Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>		<b>27.77</b>		<b>111.09</b>	<b>64.18</b>		<b>0.00</b>	<b>64.18</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 16.05 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 16.05 in <sup>3</sup>
I <sub>y</sub> =	64.18	in <sup>4</sup>	S <sub>left</sub> = 16.05 in <sup>3</sup>	I <sub>y</sub> =	64.18	in <sup>4</sup>	S <sub>left</sub> = 16.05 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 27.7734 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 27.7734 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.5202 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.5202 in

Non-composite Capacities*		
	AB	AI
M	1077.75 k-ft	1077.75 k-ft
V	163.61 k	163.61 k

\*Noncompact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



Made By CTG  
Checked By DMP

Date 3/16/2012  
Date 3/22/2012

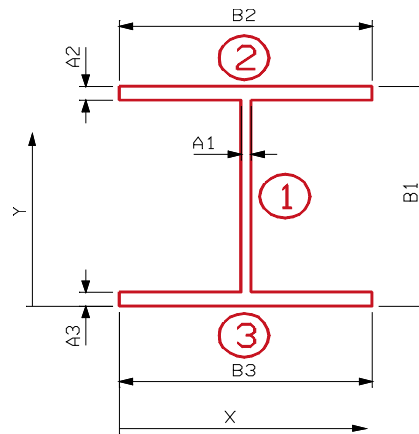
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 48.9688$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



Fascia Stringer F2-1 Avg Span 1

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	17.8008	24.4844	435.8410	3342.5153	0.0000	0.0000	3342.5153
2	Top Flange	6.0000	48.5938	291.5625	0.2813	24.1094	3487.5718	3487.8530
3	Bottom Flange	6.0000	0.3750	2.2500	0.2813	24.1094	3487.5718	3487.8530
<b>Total</b>		<b>29.80</b>		<b>729.65</b>	<b>3343.08</b>		<b>6975.14</b>	<b>10318.22</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	24.4844	in	$S_{top} = 421.42$	in <sup>3</sup>	y-bar =	24.4844	in	$S_{top} = 421.42$	in <sup>3</sup>		
$I_x =$	10318.22	n <sup>4</sup>	$S_{bott.} = 421.42$	in <sup>3</sup>	$I_x =$	10318.22	n <sup>4</sup>	$S_{bott.} = 421.42$	in <sup>3</sup>		
$C_{top} =$	24.4844	in	A =	29.8008	in <sup>2</sup>	$C_{top} =$	24.4844	in	A =	29.8008	in <sup>2</sup>
$C_{bottom} =$	24.4844	in	$r_x =$	18.6075	in	$C_{bottom} =$	24.4844	in	$r_x =$	18.6075	in
J =	3.0844	in <sup>4</sup>	Z =	500.56	in <sup>3</sup>	Z =	500.56	in <sup>3</sup>			



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	17.8008	4.0000	71.2031	0.2086	0.0000	0.0000	0.2086
2	Top Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
Total		29.80		119.20	64.21		0.00	64.21
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.00		0.00	0.00		0.00	0.00

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 16.05 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 16.05 in <sup>3</sup>
I <sub>y</sub> =	64.21	in <sup>4</sup>	S <sub>left</sub> = 16.05 in <sup>3</sup>	I <sub>y</sub> =	64.21	in <sup>4</sup>	S <sub>left</sub> = 16.05 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 29.8008 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 29.8008 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.4679 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.4679 in

Non-composite Capacities*		
	AB	AI
M	1264.26 k-ft	1264.26 k-ft
V	144.98 k	144.98 k

\*Noncompact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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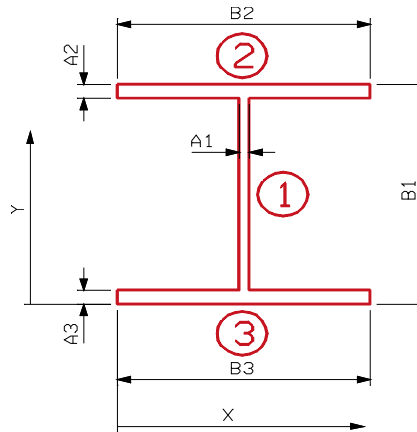
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 50.0313$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



Fascia Stringer F2-1 Avg Span 2

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		18.1992	25.0156	455.2648	3572.0247	0.0000	0.0000	3572.0247
2	Top Flange		6.0000	49.6563	297.9375	0.2813	24.6406	3642.9624	3643.2437
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	24.6406	3642.9624	3643.2437
<b>Total</b>			<b>30.20</b>		<b>755.45</b>	<b>3572.59</b>		<b>7285.92</b>	<b>10858.51</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	25.0156	in	$S_{top} = 434.07$	in <sup>3</sup>	y-bar =	25.0156	in	$S_{top} = 434.07$	in <sup>3</sup>		
$I_x =$	10858.51	in <sup>4</sup>	$S_{bott.} = 434.07$	in <sup>3</sup>	$I_x =$	10858.51	in <sup>4</sup>	$S_{bott.} = 434.07$	in <sup>3</sup>		
$C_{top} =$	25.0156	in	A =	30.1992	in <sup>2</sup>	$C_{top} =$	25.0156	in	A =	30.1992	in <sup>2</sup>
$C_{bottom} =$	25.0156	in	$r_x =$	18.9621	in	$C_{bottom} =$	25.0156	in	$r_x =$	18.9621	in
J =	3.1031	in <sup>4</sup>	Z =	516.50	in <sup>3</sup>	Z =	516.50	in <sup>3</sup>			



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	18.1992	4.0000	72.7969	0.2133	0.0000	0.0000	0.2133
2	Top Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
Total		30.20		120.80	64.21		0.00	64.21
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.00		0.00	0.00		0.00	0.00

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 16.05 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 16.05 in <sup>3</sup>
I <sub>y</sub> =	64.21	in <sup>4</sup>	S <sub>left</sub> = 16.05 in <sup>3</sup>	I <sub>y</sub> =	64.21	in <sup>4</sup>	S <sub>left</sub> = 16.05 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 30.1992 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 30.1992 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.4582 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.4582 in

Non-composite Capacities*		
	AB	AI
M	1302.21 k-ft	1302.21 k-ft
V	141.80 k	141.80 k

\*Noncompact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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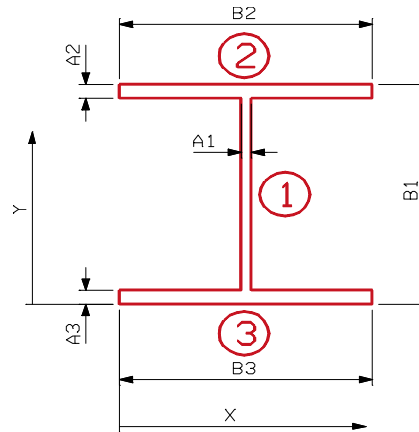
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 43.3125$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



Fascia Stringer F1-2 Avg Span 1

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		15.6797	21.6563	339.5632	2284.3804	0.0000	0.0000	2284.3804
2	Top Flange		6.0000	42.9375	257.6250	0.2813	21.2813	2717.3496	2717.6309
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	21.2813	2717.3496	2717.6309
<b>Total</b>			<b>27.68</b>		<b>599.44</b>	<b>2284.94</b>		<b>5434.70</b>	<b>7719.64</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	21.6563	in	$S_{top} = 356.46$	in <sup>3</sup>	y-bar =	21.6563	in	$S_{top} = 356.46$	in <sup>3</sup>		
$I_x =$	7719.64	n <sup>4</sup>	$S_{bott.} = 356.46$	in <sup>3</sup>	$I_x =$	7719.64	n <sup>4</sup>	$S_{bott.} = 356.46$	in <sup>3</sup>		
$C_{top} =$	21.6563	in	A =	27.6797	in <sup>2</sup>	$C_{top} =$	21.6563	in	A =	27.6797	in <sup>2</sup>
$C_{bottom} =$	21.6563	in	$r_x =$	16.7001	in	$C_{bottom} =$	21.6563	in	$r_x =$	16.7001	in
J =	2.9850	in <sup>4</sup>	Z =	419.28	in <sup>3</sup>	J =	2.9850	in <sup>4</sup>	Z =	419.28	in <sup>3</sup>



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Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	15.6797	4.0000	62.7188	0.1837	0.0000	0.0000	0.1837
2	Top Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>		<b>27.68</b>		<b>110.72</b>	<b>64.18</b>		<b>0.00</b>	<b>64.18</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 16.05 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 16.05 in <sup>3</sup>
I <sub>y</sub> =	64.18	in <sup>4</sup>	S <sub>left</sub> = 16.05 in <sup>3</sup>	I <sub>y</sub> =	64.18	in <sup>4</sup>	S <sub>left</sub> = 16.05 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 27.6797 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 27.6797 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.5228 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.5228 in

Non-composite Capacities*		
	AB	AI
M	1069.39 k-ft	1069.39 k-ft
V	164.59 k	164.59 k

\*Noncompact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear





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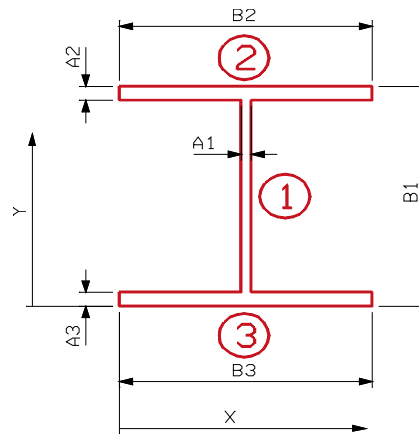
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 42.7813$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



Fascia Stringer F1-2 Avg Span 2

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		15.4805	21.3906	331.1369	2198.4092	0.0000	0.0000	2198.4092
2	Top Flange		6.0000	42.4063	254.4375	0.2813	21.0156	2649.9390	2650.2202
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	21.0156	2649.9390	2650.2202
<b>Total</b>			<b>27.48</b>		<b>587.82</b>	<b>2198.97</b>		<b>5299.88</b>	<b>7498.85</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	21.3906	in	$S_{top} = 350.57$ in <sup>3</sup>	y-bar =	21.3906	in	$S_{top} = 350.57$ in <sup>3</sup>
$I_x =$	7498.85	n <sup>4</sup>	$S_{bott.} = 350.57$ in <sup>3</sup>	$I_x =$	7498.85	n <sup>4</sup>	$S_{bott.} = 350.57$ in <sup>3</sup>
$C_{top} =$	21.3906	in	A = 27.4805 in <sup>2</sup>	$C_{top} =$	21.3906	in	A = 27.4805 in <sup>2</sup>
$C_{bottom} =$	21.3906	in	$r_x = 16.5191$ in	$C_{bottom} =$	21.3906	in	$r_x = 16.5191$ in
J =	2.9756	in <sup>4</sup>	Z = 411.95 in <sup>3</sup>				Z = <b>411.95</b> in <sup>3</sup>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	15.4805	4.0000	61.9219	0.1814	0.0000	0.0000	0.1814
2	Top Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>		<b>27.48</b>		<b>109.92</b>	<b>64.18</b>		<b>0.00</b>	<b>64.18</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 16.05 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 16.05 in <sup>3</sup>
I <sub>y</sub> =	64.18	in <sup>4</sup>	S <sub>left</sub> = 16.05 in <sup>3</sup>	I <sub>y</sub> =	64.18	in <sup>4</sup>	S <sub>left</sub> = 16.05 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 27.4805 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 27.4805 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.5282 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.5282 in

Non-composite Capacities*		
	AB	AI
M	1051.70 k-ft	1051.70 k-ft
V	166.71 k	166.71 k

\*Noncompact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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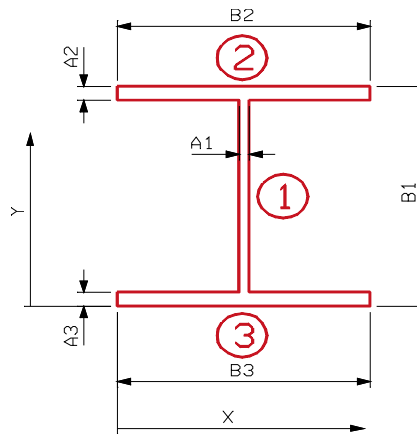
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 50.0313$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F2-2**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	18.1992	25.0156	455.2648	3572.0247	0.0000	0.0000	3572.0247
2	Top Flange	6.0000	49.6563	297.9375	0.2813	24.6406	3642.9624	3643.2437
3	Bottom Flange	6.0000	0.3750	2.2500	0.2813	24.6406	3642.9624	3643.2437
<b>Total</b>		<b>30.20</b>		<b>755.45</b>	<b>3572.59</b>		<b>7285.92</b>	<b>10858.51</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	25.0156 in	$S_{top} =$	434.07 in <sup>3</sup>	y-bar =	25.0156 in	$S_{top} =$	434.07 in <sup>3</sup>
$I_x =$	10858.51 in <sup>4</sup>	$S_{bott.} =$	434.07 in <sup>3</sup>	$I_x =$	10858.51 in <sup>4</sup>	$S_{bott.} =$	434.07 in <sup>3</sup>
$C_{top} =$	25.0156 in	A =	30.1992 in <sup>2</sup>	$C_{top} =$	25.0156 in	A =	30.1992 in <sup>2</sup>
$C_{bottom} =$	25.0156 in	$r_x =$	18.9621 in	$C_{bottom} =$	25.0156 in	$r_x =$	18.9621 in
J =	3.1031 in <sup>4</sup>	Z =	516.50 in <sup>3</sup>	Z =	516.50 in <sup>3</sup>		



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	18.1992	4.0000	72.7969	0.2133	0.0000	0.0000	0.2133
2	Top Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>		<b>30.20</b>		<b>120.80</b>	<b>64.21</b>		<b>0.00</b>	<b>64.21</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 16.05 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 16.05 in <sup>3</sup>
I <sub>y</sub> =	64.21	in <sup>4</sup>	S <sub>left</sub> = 16.05 in <sup>3</sup>	I <sub>y</sub> =	64.21	in <sup>4</sup>	S <sub>left</sub> = 16.05 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 30.1992 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 30.1992 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.4582 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.4582 in

Non-composite Capacities*		
	AB	AI
M	1302.21 k-ft	1302.21 k-ft
V	141.80 k	141.80 k

\*Noncompact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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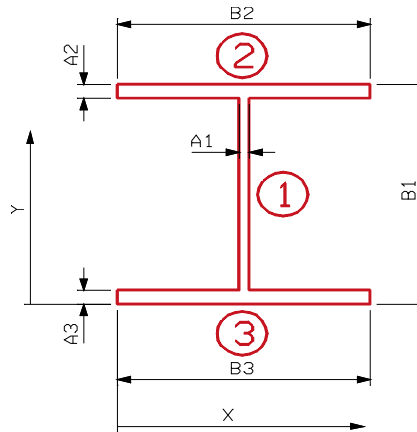
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Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 49.0313$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



Fascia Stringer F2-2 Avg Span 2

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	17.8242	24.5156	436.9719	3355.7356	0.0000	0.0000	3355.7356
2	Top Flange	6.0000	48.6563	291.9375	0.2813	24.1406	3496.6187	3496.8999
3	Bottom Flange	6.0000	0.3750	2.2500	0.2813	24.1406	3496.6187	3496.8999
<b>Total</b>		<b>29.82</b>		<b>731.16</b>	<b>3356.30</b>		<b>6993.24</b>	<b>10349.54</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	24.5156 in	$S_{top} =$	422.16 in <sup>3</sup>	y-bar =	24.5156 in	$S_{top} =$	422.16 in <sup>3</sup>
$I_x =$	10349.54 in <sup>4</sup>	$S_{bott.} =$	422.16 in <sup>3</sup>	$I_x =$	10349.54 in <sup>4</sup>	$S_{bott.} =$	422.16 in <sup>3</sup>
$C_{top} =$	24.5156 in	A =	29.8242 in <sup>2</sup>	$C_{top} =$	24.5156 in	A =	29.8242 in <sup>2</sup>
$C_{bottom} =$	24.5156 in	$r_x =$	18.6284 in	$C_{bottom} =$	24.5156 in	$r_x =$	18.6284 in
J =	3.0855 in <sup>4</sup>	Z =	501.49 in <sup>3</sup>			Z =	501.49 in <sup>3</sup>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	17.8242	4.0000	71.2969	0.2089	0.0000	0.0000	0.2089
2	Top Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
Total		29.82		119.30	64.21		0.00	64.21
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.00		0.00	0.00		0.00	0.00

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 16.05 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 16.05 in <sup>3</sup>
I <sub>y</sub> =	64.21	in <sup>4</sup>	S <sub>left</sub> = 16.05 in <sup>3</sup>	I <sub>y</sub> =	64.21	in <sup>4</sup>	S <sub>left</sub> = 16.05 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 29.8242 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 29.8242 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.4673 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.4673 in

Non-composite Capacities*		
	AB	AI
M	1266.48 k-ft	1266.48 k-ft
V	144.79 k	144.79 k

\*Noncompact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/16/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

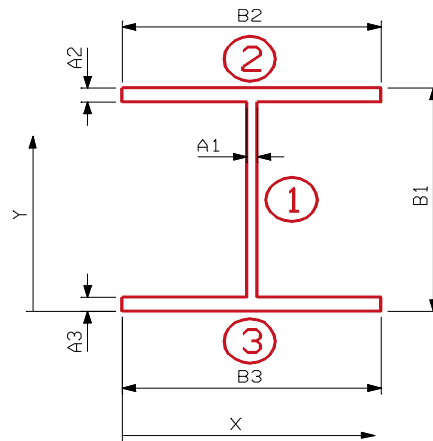
Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 41.9688$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in

$d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F1-3 Avg**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		15.1758	20.9844	318.4543	2071.1397	0.0000	0.0000	2071.1397
2	Top Flange		6.0000	41.5938	249.5625	0.2813	20.6094	2548.4780	2548.7593
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	20.6094	2548.4780	2548.7593
<b>Total</b>			<b>27.18</b>		<b>570.27</b>	<b>2071.70</b>		<b>5096.96</b>	<b>7168.66</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	20.9844	in	S <sub>top</sub> =	341.62	in <sup>3</sup>	y-bar =	20.9844	in	S <sub>top</sub> =	341.62	in <sup>3</sup>
I <sub>x</sub> =	7168.66	in <sup>4</sup>	S <sub>bott.</sub> =	341.62	in <sup>3</sup>	I <sub>x</sub> =	7168.66	in <sup>4</sup>	S <sub>bott.</sub> =	341.62	in <sup>3</sup>
C <sub>top</sub> =	20.9844	in	A =	27.1758	in <sup>2</sup>	C <sub>top</sub> =	20.9844	in	A =	27.1758	in <sup>2</sup>
C <sub>bottom</sub> =	20.9844	in	r <sub>x</sub> =	16.2416	in	C <sub>bottom</sub> =	20.9844	in	r <sub>x</sub> =	16.2416	in
J =	2.9614	in <sup>4</sup>	Z =	400.85	in <sup>3</sup>	Z =	400.85	in <sup>3</sup>			



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Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		15.1758	4.0000	60.7031	0.1778	0.0000	0.0000	0.1778
2	Top Flange		6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange		6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>			<b>27.18</b>		<b>108.70</b>	<b>64.18</b>		<b>0.00</b>	<b>64.18</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	4.0000	in	S <sub>right</sub> =	16.04	in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> =	16.04	in <sup>3</sup>
I <sub>y</sub> =	64.18	in <sup>4</sup>	S <sub>left</sub> =	16.04	in <sup>3</sup>	I <sub>y</sub> =	64.18	in <sup>4</sup>	S <sub>left</sub> =	16.04	in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A =	27.1758	in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A =	27.1758	in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> =	1.5367	in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> =	1.5367	in

Non-composite Capacities*		
	AB	AI
M	#####	#####
V	170.05 k	170.05 k

\*Noncompact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear





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Date 3/16/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

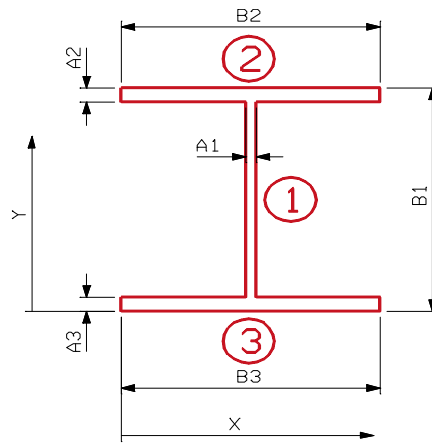
Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 19.5000$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.7500$  in

$d_o = n/a$  in

$d_o =$  stiffener spacing for shear check for no stiffeners use "N/A"



Fascia Stringer F1-4 @ FB A6

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		6.7500	9.7500	65.8125	182.2500	0.2731	0.5033	182.7533
2	Top Flange		6.0000	19.1250	114.7500	0.2813	9.6481	558.5102	558.7914
3	Bottom Flange		6.5625	0.3750	2.4609	0.3076	9.1019	543.6726	543.9802
<b>Total</b>			<b>19.31</b>		<b>183.02</b>	<b>182.84</b>		<b>1102.69</b>	<b>1285.52</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	9.4769	in	$S_{top} = 128.26$	$in^3$	y-bar =	9.4769	in	$S_{top} = 128.26$	$in^3$		
$I_x =$	1285.52	$in^4$	$S_{bott.} = 135.65$	$in^3$	$I_x =$	1285.52	$in^4$	$S_{bott.} = 135.65$	$in^3$		
$C_{top} =$	10.0231	in	A =	19.3125	$in^2$	$C_{top} =$	10.0231	in	A =	19.3125	$in^2$
$C_{bottom} =$	9.4769	in	$r_x =$	8.1587	in	$C_{bottom} =$	9.4769	in	$r_x =$	8.1587	in
J =	2.6719	$in^4$	Z =	147.94	$in^3$	Z =	147.94	$in^3$			



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Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		6.7500	4.3750	29.5313	0.0791	0.0000	0.0000	0.0791
2	Top Flange		6.0000	4.3750	26.2500	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange		6.5625	4.3750	28.7109	41.8701	0.0000	0.0000	41.8701
<b>Total</b>			<b>19.31</b>		<b>84.49</b>	<b>73.95</b>		<b>0.00</b>	<b>73.95</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.3750	in	S <sub>right</sub> = 16.90 in <sup>3</sup>	x-bar =	4.3750	in	S <sub>right</sub> = 16.90 in <sup>3</sup>
I <sub>y</sub> =	73.95	in <sup>4</sup>	S <sub>left</sub> = 16.90 in <sup>3</sup>	I <sub>y</sub> =	73.95	in <sup>4</sup>	S <sub>left</sub> = 16.90 in <sup>3</sup>
C <sub>right</sub> =	4.3750	in	A = 19.3125 in <sup>2</sup>	C <sub>right</sub> =	4.3750	in	A = 19.3125 in <sup>2</sup>
C <sub>left</sub> =	4.3750	in	r <sub>y</sub> = 1.9568 in	C <sub>left</sub> =	4.3750	in	r <sub>y</sub> = 1.9568 in

Non-composite Capacities*		
	AB	AI
M	443.81 k-ft	443.81 k-ft
V	140.94 k	140.94 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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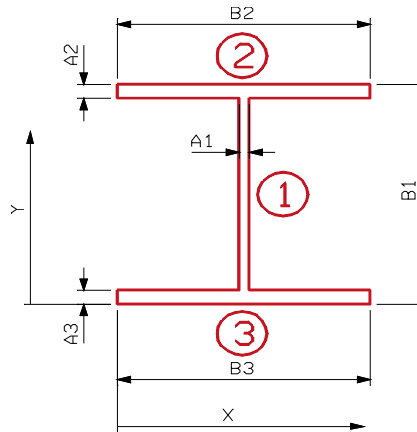
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 41.0313$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



Fascia Stringer F1-4 Avg

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		14.8242	20.5156	304.1281	1930.5083	0.0000	0.0000	1930.5083
2	Top Flange		6.0000	40.6563	243.9375	0.2813	20.1406	2433.8687	2434.1499
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	20.1406	2433.8687	2434.1499
<b>Total</b>			<b>26.82</b>		<b>550.32</b>	<b>1931.07</b>		<b>4867.74</b>	<b>6798.81</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	20.5156	in	$S_{top} = 331.40$ in <sup>3</sup>	y-bar =	20.5156	in	$S_{top} = 331.40$ in <sup>3</sup>
$I_x =$	6798.81	in <sup>4</sup>	$S_{bottom} = 331.40$ in <sup>3</sup>	$I_x =$	6798.81	in <sup>4</sup>	$S_{bottom} = 331.40$ in <sup>3</sup>
$C_{top} =$	20.5156	in	A = 26.8242 in <sup>2</sup>	$C_{top} =$	20.5156	in	A = 26.8242 in <sup>2</sup>
$C_{bottom} =$	20.5156	in	$r_x = 15.9204$ in	$C_{bottom} =$	20.5156	in	$r_x = 15.9204$ in
J =	2.9449	in <sup>4</sup>	Z = 388.19 in <sup>3</sup>				Z = <b>388.19</b> in <sup>3</sup>



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Date 3/16/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	14.8242	4.0000	59.2969	0.1737	0.0000	0.0000	0.1737
2	Top Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>		<b>26.82</b>		<b>107.30</b>	<b>64.17</b>		<b>0.00</b>	<b>64.17</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 16.04 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 16.04 in <sup>3</sup>
I <sub>y</sub> =	64.17	in <sup>4</sup>	S <sub>left</sub> = 16.04 in <sup>3</sup>	I <sub>y</sub> =	64.17	in <sup>4</sup>	S <sub>left</sub> = 16.04 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 26.8242 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 26.8242 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.5467 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.5467 in

Non-composite Capacities*		
	AB	AI
M	994.19 k-ft	994.19 k-ft
V	174.09 k	174.09 k

\*Noncompact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



Made By CTG  
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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W24x84	<b>Bottom Angles:</b>	
$A_1 = b_f =$	9.0200 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7700 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	18.7500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.4700 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	19.2500 in
$B_3 = t =$	0.4700 in	$Gap =$	0.5000 in

\*select from dropdown list

**Coped Stringer S1-4 @ FB B1**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.9454	18.8650	131.0250	0.3432	9.6227	643.1195	643.4626
	Web	8.4506	9.4900	80.1962	227.6594	0.2477	0.5185	228.1780
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	8.9923	283.0148	283.0877
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	6.2423	233.7974	251.7974
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	8.7423	0.0000	0.0000
<b>Total</b>		<b>24.90</b>		<b>230.10</b>	<b>246.08</b>		<b>1160.45</b>	<b>1406.53</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



Made By CTG  
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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	9.2423 in	S <sub>top</sub> =	140.54 in <sup>3</sup>	y-bar =	9.2423 in	S <sub>top</sub> =	140.54 in <sup>3</sup>
I <sub>x</sub> =	1406.53 in <sup>4</sup>	S <sub>bottom</sub> =	152.18 in <sup>3</sup>	I <sub>x</sub> =	1406.53 in <sup>4</sup>	S <sub>bottom</sub> =	152.18 in <sup>3</sup>
C <sub>top</sub> =	10.0077 in	A =	24.8960 in <sup>2</sup>	C <sub>top</sub> =	10.0077 in	A =	24.8960 in <sup>2</sup>
C <sub>bottom</sub> =	9.2423 in	r <sub>x</sub> =	7.5164 in	C <sub>bottom</sub> =	9.2423 in	r <sub>x</sub> =	7.5164 in
J =	2.7866 in <sup>4</sup>	Z =	170.91 in <sup>3</sup>			Z =	170.91 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.9454	4.2350	29.4138	47.0900	0.2750	0.5252	47.6153
	Web		8.4506	4.2350	35.7883	0.1556	0.2750	0.6391	0.7946
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.7600	13.3308	15.1173
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.7600	1.7328	1.7953
2 (Right)	Horizontal Leg		1.7500	6.7200	11.7600	1.7865	2.2100	8.5472	10.3336
	Vertical Leg		3.0000	4.7200	14.1600	0.0625	0.2100	0.1323	0.1948
3	Additional Plate		0.0000	4.2350	0.0000	0.0000	0.2750	0.0000	0.0000
<b>Total</b>			<b>24.90</b>		<b>105.43</b>	<b>50.94</b>		<b>24.91</b>	<b>75.85</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.5100 in	S <sub>right</sub> =	16.82 in <sup>3</sup>	x-bar =	4.5100 in	S <sub>right</sub> =	16.82 in <sup>3</sup>
I <sub>y</sub> =	75.85 in <sup>4</sup>	S <sub>left</sub> =	16.82 in <sup>3</sup>	I <sub>y</sub> =	75.85 in <sup>4</sup>	S <sub>left</sub> =	16.82 in <sup>3</sup>
C <sub>right</sub> =	4.5100 in	A =	24.8960 in <sup>2</sup>	C <sub>right</sub> =	4.5100 in	A =	24.8960 in <sup>2</sup>
C <sub>left</sub> =	4.5100 in	r <sub>y</sub> =	1.7455 in	C <sub>left</sub> =	4.5100 in	r <sub>y</sub> =	1.7455 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	512.73 k-ft	512.73 k-ft
V	291.29 k	291.29 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W24x84	<b>Bottom Angles:</b>
$A_1 = b_f =$	9.0200 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.7700 in	$B_2 = L_h =$ 4.0000 in
$C_1 = d =$	19.2500 in	$C_2 = t =$ 0.5000 in
$D_1 = t_w =$	0.4700 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	$H =$ 19.7500 in
$B_3 = t =$	0.4700 in	$Gap =$ 0.5000 in

\*select from dropdown list

**Coped Stringer S2-4 @ FB B1**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.9454	19.3650	134.4977	0.3432	9.8958	680.1415	680.4846
	Web	8.6856	9.7400	84.5977	247.1852	0.2708	0.6369	247.8222
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	9.2192	297.4776	297.5506
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	6.4692	251.1031	269.1031
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	8.9692	0.0000	0.0000
<b>Total</b>		<b>25.13</b>		<b>237.97</b>	<b>265.60</b>		<b>1229.36</b>	<b>1494.96</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	9.4692 in	S <sub>top</sub> =	145.41 in <sup>3</sup>	y-bar =	9.4692 in	S <sub>top</sub> =	145.41 in <sup>3</sup>
I <sub>x</sub> =	1494.96 in <sup>4</sup>	S <sub>bottom</sub> =	157.88 in <sup>3</sup>	I <sub>x</sub> =	1494.96 in <sup>4</sup>	S <sub>bottom</sub> =	157.88 in <sup>3</sup>
C <sub>top</sub> =	10.2808 in	A =	25.1310 in <sup>2</sup>	C <sub>top</sub> =	10.2808 in	A =	25.1310 in <sup>2</sup>
C <sub>bottom</sub> =	9.4692 in	r <sub>x</sub> =	7.7128 in	C <sub>bottom</sub> =	9.4692 in	r <sub>x</sub> =	7.7128 in
J =	2.8039 in <sup>4</sup>	Z =	177.16 in <sup>3</sup>	Z =	177.16 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.9454	4.2350	29.4138	47.0900	0.2750	0.5252	47.6153
	Web		8.6856	4.2350	36.7835	0.1599	0.2750	0.6568	0.8167
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.7600	13.3308	15.1173
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.7600	1.7328	1.7953
2 (Right)	Horizontal Leg		1.7500	6.7200	11.7600	1.7865	2.2100	8.5472	10.3336
	Vertical Leg		3.0000	4.7200	14.1600	0.0625	0.2100	0.1323	0.1948
3	Additional Plate		0.0000	4.2350	0.0000	0.0000	0.2750	0.0000	0.0000
<b>Total</b>			<b>25.13</b>		<b>106.43</b>	<b>50.95</b>		<b>24.93</b>	<b>75.87</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.5100 in	S <sub>right</sub> =	16.82 in <sup>3</sup>	x-bar =	4.5100 in	S <sub>right</sub> =	16.82 in <sup>3</sup>
I <sub>y</sub> =	75.87 in <sup>4</sup>	S <sub>left</sub> =	16.82 in <sup>3</sup>	I <sub>y</sub> =	75.87 in <sup>4</sup>	S <sub>left</sub> =	16.82 in <sup>3</sup>
C <sub>right</sub> =	4.5100 in	A =	25.1310 in <sup>2</sup>	C <sub>right</sub> =	4.5100 in	A =	25.1310 in <sup>2</sup>
C <sub>left</sub> =	4.5100 in	r <sub>y</sub> =	1.7376 in	C <sub>left</sub> =	4.5100 in	r <sub>y</sub> =	1.7376 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	531.48 k-ft	531.48 k-ft
V	296.20 k	296.20 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W24x84	<b>Bottom Angles:</b>	
$A_1 = b_f =$	9.0200 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7700 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	20.2500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.4700 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	20.8125 in
$B_3 = t =$	0.4700 in	$GAP =$	0.5625 in

\*select from dropdown list

**Coped Stringer S3-4 @ FB B1**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.9454	20.4275	141.8772	0.3432	10.4639	760.4763	760.8195
	Web	9.1556	10.3025	94.3256	289.5233	0.3389	1.0516	290.5749
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	9.7136	330.2380	330.3110
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	6.9636	290.9491	308.9491
3	Additional Plate	0.0000	0.5625	0.0000	0.0000	9.4011	0.0000	0.0000
<b>Total</b>		<b>25.60</b>		<b>255.08</b>	<b>307.94</b>		<b>1382.72</b>	<b>1690.65</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	9.9636 in	S <sub>top</sub> =	155.84 in <sup>3</sup>	y-bar =	9.9636 in	S <sub>top</sub> =	155.84 in <sup>3</sup>
I <sub>x</sub> =	1690.65 in <sup>4</sup>	S <sub>bottom</sub> =	169.68 in <sup>3</sup>	I <sub>x</sub> =	1690.65 in <sup>4</sup>	S <sub>bottom</sub> =	169.68 in <sup>3</sup>
C <sub>top</sub> =	10.8489 in	A =	25.6010 in <sup>2</sup>	C <sub>top</sub> =	10.8489 in	A =	25.6010 in <sup>2</sup>
C <sub>bottom</sub> =	9.9636 in	r <sub>x</sub> =	8.1264 in	C <sub>bottom</sub> =	9.9636 in	r <sub>x</sub> =	8.1264 in
J =	2.8385 in <sup>4</sup>	Z =	190.44 in <sup>3</sup>			Z =	190.44 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.9454	4.2350	29.4138	47.0900	0.2750	0.5252	47.6153
	Web		9.1556	4.2350	38.7740	0.1685	0.2750	0.6924	0.8609
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.7600	13.3308	15.1173
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.7600	1.7328	1.7953
2 (Right)	Horizontal Leg		1.7500	6.7200	11.7600	1.7865	2.2100	8.5472	10.3336
	Vertical Leg		3.0000	4.7200	14.1600	0.0625	0.2100	0.1323	0.1948
3	Additional Plate		0.0000	4.2350	0.0000	0.0000	0.2750	0.0000	0.0000
<b>Total</b>			<b>25.60</b>		<b>108.42</b>	<b>50.96</b>		<b>24.96</b>	<b>75.92</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.5100 in	S <sub>right</sub> =	16.83 in <sup>3</sup>	x-bar =	4.5100 in	S <sub>right</sub> =	16.83 in <sup>3</sup>
I <sub>y</sub> =	75.92 in <sup>4</sup>	S <sub>left</sub> =	16.83 in <sup>3</sup>	I <sub>y</sub> =	75.92 in <sup>4</sup>	S <sub>left</sub> =	16.83 in <sup>3</sup>
C <sub>right</sub> =	4.5100 in	A =	25.6010 in <sup>2</sup>	C <sub>right</sub> =	4.5100 in	A =	25.6010 in <sup>2</sup>
C <sub>left</sub> =	4.5100 in	r <sub>y</sub> =	1.7220 in	C <sub>left</sub> =	4.5100 in	r <sub>y</sub> =	1.7220 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	571.32 k-ft	571.32 k-ft
V	306.01 k	306.01 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



Made By CTG  
Checked By DMP

Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W24x94	<b>Bottom Angles:</b>
$A_1 = b_f =$	9.0700 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.8750 in	$B_2 = L_h =$ 4.0000 in
$C_1 = d =$	20.7500 in	$C_2 = t =$ 0.5000 in
$D_1 = t_w =$	0.5150 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	$H =$ 21.2500 in
$B_3 = t =$	0.5150 in	$Gap =$ 0.5000 in

\*select from dropdown list

Coped Stringer S4-4 @ FB B1

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	7.9363	20.8125	165.1732	0.5063	10.3007	842.0634	842.5697
	Web	10.2356	10.4375	106.8343	336.9360	0.0743	0.0566	336.9926
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	10.2618	368.5693	368.6422
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	7.5118	338.5671	356.5671
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	10.0118	0.0000	0.0000
<b>Total</b>		<b>27.67</b>		<b>290.88</b>	<b>355.52</b>		<b>1549.26</b>	<b>1904.77</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	10.5118 in	S <sub>top</sub> =	177.38 in <sup>3</sup>	y-bar =	10.5118 in	S <sub>top</sub> =	177.38 in <sup>3</sup>
I <sub>x</sub> =	1904.77 in <sup>4</sup>	S <sub>bottom</sub> =	181.20 in <sup>3</sup>	I <sub>x</sub> =	1904.77 in <sup>4</sup>	S <sub>bottom</sub> =	181.20 in <sup>3</sup>
C <sub>top</sub> =	10.7382 in	A =	27.6719 in <sup>2</sup>	C <sub>top</sub> =	10.7382 in	A =	27.6719 in <sup>2</sup>
C <sub>bottom</sub> =	10.5118 in	r <sub>x</sub> =	8.2966 in	C <sub>bottom</sub> =	10.5118 in	r <sub>x</sub> =	8.2966 in
J =	3.7220 in <sup>4</sup>	Z =	212.29 in <sup>3</sup>	Z =	212.29 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		7.9363	4.2575	33.7886	54.4062	0.2775	0.6111	55.0174
	Web		10.2356	4.2575	43.5782	0.2262	0.2775	0.7882	1.0144
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.7850	13.5734	15.3599
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.7850	1.8487	1.9112
2 (Right)	Horizontal Leg		1.7500	6.7650	11.8388	1.7865	2.2300	8.7026	10.4890
	Vertical Leg		3.0000	4.7650	14.2950	0.0625	0.2300	0.1587	0.2212
3	Additional Plate		0.0000	4.2575	0.0000	0.0000	0.2775	0.0000	0.0000
<b>Total</b>			<b>27.67</b>		<b>117.81</b>	<b>58.33</b>		<b>25.68</b>	<b>84.01</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.5350 in	S <sub>right</sub> =	18.53 in <sup>3</sup>	x-bar =	4.5350 in	S <sub>right</sub> =	18.53 in <sup>3</sup>
I <sub>y</sub> =	84.01 in <sup>4</sup>	S <sub>left</sub> =	18.53 in <sup>3</sup>	I <sub>y</sub> =	84.01 in <sup>4</sup>	S <sub>left</sub> =	18.53 in <sup>3</sup>
C <sub>right</sub> =	4.5350 in	A =	27.6719 in <sup>2</sup>	C <sub>right</sub> =	4.5350 in	A =	27.6719 in <sup>2</sup>
C <sub>left</sub> =	4.5350 in	r <sub>y</sub> =	1.7424 in	C <sub>left</sub> =	4.5350 in	r <sub>y</sub> =	1.7424 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	636.87 k-ft	636.87 k-ft
V	328.56 k	328.56 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W24x94	<b>Bottom Angles:</b>	
$A_1 = b_f =$	9.0700 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8750 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	21.2500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5150 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	21.7500 in
$B_3 = t =$	0.5150 in	$Gap =$	0.5000 in

\*select from dropdown list

**Coped Stringer S5-4 @ FB B1**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	7.9363	21.3125	169.1413	0.5063	10.5653	885.8943	886.4006
	Web	10.4931	10.6875	112.1453	363.0102	0.0597	0.0374	363.0476
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	10.4972	385.6667	385.7396
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	7.7472	360.1114	378.1114
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	10.2472	0.0000	0.0000
<b>Total</b>		<b>27.93</b>		<b>300.16</b>	<b>381.59</b>		<b>1631.71</b>	<b>2013.30</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	10.7472 in	S <sub>top</sub> =	182.98 in <sup>3</sup>	y-bar =	10.7472 in	S <sub>top</sub> =	182.98 in <sup>3</sup>
I <sub>x</sub> =	2013.30 in <sup>4</sup>	S <sub>bottom</sub> =	187.33 in <sup>3</sup>	I <sub>x</sub> =	2013.30 in <sup>4</sup>	S <sub>bottom</sub> =	187.33 in <sup>3</sup>
C <sub>top</sub> =	11.0028 in	A =	27.9294 in <sup>2</sup>	C <sub>top</sub> =	11.0028 in	A =	27.9294 in <sup>2</sup>
C <sub>bottom</sub> =	10.7472 in	r <sub>x</sub> =	8.4903 in	C <sub>bottom</sub> =	10.7472 in	r <sub>x</sub> =	8.4903 in
J =	3.7447 in <sup>4</sup>	Z =	219.24 in <sup>3</sup>			Z =	219.24 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		7.9363	4.2575	33.7886	54.4062	0.2775	0.6111	55.0174
	Web		10.4931	4.2575	44.6745	0.2319	0.2775	0.8080	1.0400
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.7850	13.5734	15.3599
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.7850	1.8487	1.9112
2 (Right)	Horizontal Leg		1.7500	6.7650	11.8388	1.7865	2.2300	8.7026	10.4890
	Vertical Leg		3.0000	4.7650	14.2950	0.0625	0.2300	0.1587	0.2212
3	Additional Plate		0.0000	4.2575	0.0000	0.0000	0.2775	0.0000	0.0000
<b>Total</b>			<b>27.93</b>		<b>118.91</b>	<b>58.34</b>		<b>25.70</b>	<b>84.04</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.5350 in	S <sub>right</sub> =	18.53 in <sup>3</sup>	x-bar =	4.5350 in	S <sub>right</sub> =	18.53 in <sup>3</sup>
I <sub>y</sub> =	84.04 in <sup>4</sup>	S <sub>left</sub> =	18.53 in <sup>3</sup>	I <sub>y</sub> =	84.04 in <sup>4</sup>	S <sub>left</sub> =	18.53 in <sup>3</sup>
C <sub>right</sub> =	4.5350 in	A =	27.9294 in <sup>2</sup>	C <sub>right</sub> =	4.5350 in	A =	27.9294 in <sup>2</sup>
C <sub>left</sub> =	4.5350 in	r <sub>y</sub> =	1.7346 in	C <sub>left</sub> =	4.5350 in	r <sub>y</sub> =	1.7346 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	657.72 k-ft	657.72 k-ft
V	333.94 k	333.94 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



Made By CTG  
Checked By DMP

Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W24x94	<b>Bottom Angles:</b>	
$A_1 = b_f =$	9.0700 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8750 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	21.0000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5150 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	21.5000 in
$B_3 = t =$	0.5150 in	$Gap =$	0.5000 in

\*select from dropdown list

**Coped Stringer S6-4 @ FB B1**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	7.9363	21.0625	167.1573	0.5063	10.4330	863.8455	864.3518
	Web	10.3644	10.5625	109.4737	349.8112	0.0670	0.0465	349.8576
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	10.3795	377.0671	377.1400
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	7.6295	349.2531	367.2531
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	10.1295	0.0000	0.0000
<b>Total</b>		<b>27.80</b>		<b>295.51</b>	<b>368.39</b>		<b>1590.21</b>	<b>1958.60</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



Made By CTG  
Checked By DMP

Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	10.6295 in	S <sub>top</sub> =	180.18 in <sup>3</sup>	y-bar =	10.6295 in	S <sub>top</sub> =	180.18 in <sup>3</sup>
I <sub>x</sub> =	1958.60 in <sup>4</sup>	S <sub>bottom</sub> =	184.26 in <sup>3</sup>	I <sub>x</sub> =	1958.60 in <sup>4</sup>	S <sub>bottom</sub> =	184.26 in <sup>3</sup>
C <sub>top</sub> =	10.8705 in	A =	27.8006 in <sup>2</sup>	C <sub>top</sub> =	10.8705 in	A =	27.8006 in <sup>2</sup>
C <sub>bottom</sub> =	10.6295 in	r <sub>x</sub> =	8.3936 in	C <sub>bottom</sub> =	10.6295 in	r <sub>x</sub> =	8.3936 in
J =	3.7334 in <sup>4</sup>	Z =	215.76 in <sup>3</sup>			Z =	215.76 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		7.9363	4.2575	33.7886	54.4062	0.2775	0.6111	55.0174
	Web		10.3644	4.2575	44.1263	0.2291	0.2775	0.7981	1.0272
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.7850	13.5734	15.3599
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.7850	1.8487	1.9112
2 (Right)	Horizontal Leg		1.7500	6.7650	11.8388	1.7865	2.2300	8.7026	10.4890
	Vertical Leg		3.0000	4.7650	14.2950	0.0625	0.2300	0.1587	0.2212
3	Additional Plate		0.0000	4.2575	0.0000	0.0000	0.2775	0.0000	0.0000
<b>Total</b>			<b>27.80</b>		<b>118.36</b>	<b>58.33</b>		<b>25.69</b>	<b>84.03</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.5350 in	S <sub>right</sub> =	18.53 in <sup>3</sup>	x-bar =	4.5350 in	S <sub>right</sub> =	18.53 in <sup>3</sup>
I <sub>y</sub> =	84.03 in <sup>4</sup>	S <sub>left</sub> =	18.53 in <sup>3</sup>	I <sub>y</sub> =	84.03 in <sup>4</sup>	S <sub>left</sub> =	18.53 in <sup>3</sup>
C <sub>right</sub> =	4.5350 in	A =	27.8006 in <sup>2</sup>	C <sub>right</sub> =	4.5350 in	A =	27.8006 in <sup>2</sup>
C <sub>left</sub> =	4.5350 in	r <sub>y</sub> =	1.7385 in	C <sub>left</sub> =	4.5350 in	r <sub>y</sub> =	1.7385 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	647.28 k-ft	647.28 k-ft
V	331.25 k	331.25 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W24x94	<b>Bottom Angles:</b>	
$A_1 = b_f =$	9.0700 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8750 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	21.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5150 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	22.0000 in
$B_3 = t =$	0.5150 in	$Gap =$	0.5000 in

\*select from dropdown list

**Coped Stringer S7-4 @ FB B1**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	7.9363	21.5625	171.1254	0.5063	10.6976	908.2095	908.7159
	Web	10.6219	10.8125	114.8490	376.5372	0.0524	0.0292	376.5664
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	10.6149	394.3682	394.4411
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	7.8649	371.1422	389.1422
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	10.3649	0.0000	0.0000
<b>Total</b>		<b>28.06</b>		<b>304.85</b>	<b>395.12</b>		<b>1673.75</b>	<b>2068.87</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	10.8649 in	S <sub>top</sub> =	185.80 in <sup>3</sup>	y-bar =	10.8649 in	S <sub>top</sub> =	185.80 in <sup>3</sup>
I <sub>x</sub> =	2068.87 in <sup>4</sup>	S <sub>bott.</sub> =	190.42 in <sup>3</sup>	I <sub>x</sub> =	2068.87 in <sup>4</sup>	S <sub>bott.</sub> =	190.42 in <sup>3</sup>
C <sub>top</sub> =	11.1351 in	A =	28.0581 in <sup>2</sup>	C <sub>top</sub> =	11.1351 in	A =	28.0581 in <sup>2</sup>
C <sub>bottom</sub> =	10.8649 in	r <sub>x</sub> =	8.5869 in	C <sub>bottom</sub> =	10.8649 in	r <sub>x</sub> =	8.5869 in
J =	3.7561 in <sup>4</sup>	Z =	222.74 in <sup>3</sup>			Z =	222.74 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		7.9363	4.2575	33.7886	54.4062	0.2775	0.6111	55.0174
	Web		10.6219	4.2575	45.2226	0.2348	0.2775	0.8180	1.0527
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.7850	13.5734	15.3599
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.7850	1.8487	1.9112
2 (Right)	Horizontal Leg		1.7500	6.7650	11.8388	1.7865	2.2300	8.7026	10.4890
	Vertical Leg		3.0000	4.7650	14.2950	0.0625	0.2300	0.1587	0.2212
3	Additional Plate		0.0000	4.2575	0.0000	0.0000	0.2775	0.0000	0.0000
<b>Total</b>			<b>28.06</b>		<b>119.46</b>	<b>58.34</b>		<b>25.71</b>	<b>84.05</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.5350 in	S <sub>right</sub> =	18.53 in <sup>3</sup>	x-bar =	4.5350 in	S <sub>right</sub> =	18.53 in <sup>3</sup>
I <sub>y</sub> =	84.05 in <sup>4</sup>	S <sub>left</sub> =	18.53 in <sup>3</sup>	I <sub>y</sub> =	84.05 in <sup>4</sup>	S <sub>left</sub> =	18.53 in <sup>3</sup>
C <sub>right</sub> =	4.5350 in	A =	28.0581 in <sup>2</sup>	C <sub>right</sub> =	4.5350 in	A =	28.0581 in <sup>2</sup>
C <sub>left</sub> =	4.5350 in	r <sub>y</sub> =	1.7308 in	C <sub>left</sub> =	4.5350 in	r <sub>y</sub> =	1.7308 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	668.22 k-ft	668.22 k-ft
V	336.62 k	336.62 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Job No. P402110046  
Sheet No. \_\_\_\_\_

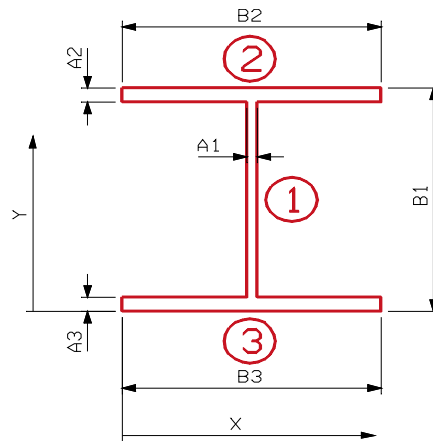
Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 21.0000$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.7500$  in

$d_o = n/a$  in

$d_o =$  stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F2-4 @ FB A6**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		7.3125	10.5000	76.7813	231.7148	0.2866	0.6005	232.3153
2	Top Flange		6.0000	20.6250	123.7500	0.2813	10.4116	650.4031	650.6843
3	Bottom Flange		6.5625	0.3750	2.4609	0.3076	9.8384	635.2170	635.5246
<b>Total</b>			<b>19.88</b>		<b>202.99</b>	<b>232.30</b>		<b>1286.22</b>	<b>1518.52</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	10.2134	in	$S_{top} = 140.78$	$in^3$	y-bar =	10.2134	in	$S_{top} = 140.78$	$in^3$		
$I_x =$	1518.52	$in^4$	$S_{bott.} = 148.68$	$in^3$	$I_x =$	1518.52	$in^4$	$S_{bott.} = 148.68$	$in^3$		
$C_{top} =$	10.7866	in	A =	19.8750	$in^2$	$C_{top} =$	10.7866	in	A =	19.8750	$in^2$
$C_{bottom} =$	10.2134	in	$r_x =$	8.7409	in	$C_{bottom} =$	10.2134	in	$r_x =$	8.7409	in
J =	2.6982	$in^4$	Z =	162.63	$in^3$	Z =	162.63	$in^3$			



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 Date 3/22/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		7.3125	4.3750	31.9922	0.0857	0.0000	0.0000	0.0857
2	Top Flange		6.0000	4.3750	26.2500	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange		6.5625	4.3750	28.7109	41.8701	0.0000	0.0000	41.8701
<b>Total</b>			<b>19.88</b>		<b>86.95</b>	<b>73.96</b>		<b>0.00</b>	<b>73.96</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.3750	in	S <sub>right</sub> = 16.90 in <sup>3</sup>	x-bar =	4.3750	in	S <sub>right</sub> = 16.90 in <sup>3</sup>
I <sub>y</sub> =	73.96	in <sup>4</sup>	S <sub>left</sub> = 16.90 in <sup>3</sup>	I <sub>y</sub> =	73.96	in <sup>4</sup>	S <sub>left</sub> = 16.90 in <sup>3</sup>
C <sub>right</sub> =	4.3750	in	A = 19.8750 in <sup>2</sup>	C <sub>right</sub> =	4.3750	in	A = 19.8750 in <sup>2</sup>
C <sub>left</sub> =	4.3750	in	r <sub>y</sub> = 1.9290 in	C <sub>left</sub> =	4.3750	in	r <sub>y</sub> = 1.9290 in

Non-composite Capacities*		
	AB	AI
M	487.90 k-ft	487.90 k-ft
V	152.69 k	152.69 k

\*Compact Section

F <sub>y</sub> =	36.00 ksi
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AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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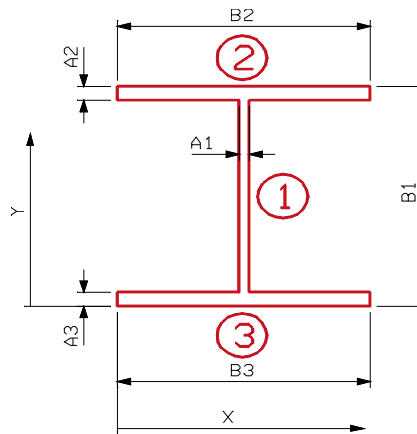
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 45.5313$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



Fascia Stringer F2-4 Avg

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		16.5117	22.7656	375.8996	2667.6759	0.0000	0.0000	2667.6759
2	Top Flange		6.0000	45.1563	270.9375	0.2813	22.3906	3008.0405	3008.3218
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	22.3906	3008.0405	3008.3218
<b>Total</b>			<b>28.51</b>		<b>649.09</b>	<b>2668.24</b>		<b>6016.08</b>	<b>8684.32</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	22.7656	in	$S_{top} = 381.47$	$in^3$	y-bar =	22.7656	in	$S_{top} = 381.47$	$in^3$		
$I_x =$	8684.32	$n^4$	$S_{bott.} = 381.47$	$in^3$	$I_x =$	8684.32	$n^4$	$S_{bott.} = 381.47$	$in^3$		
$C_{top} =$	22.7656	in	A =	28.5117	$in^2$	$C_{top} =$	22.7656	in	A =	28.5117	$in^2$
$C_{bottom} =$	22.7656	in	$r_x =$	17.4524	in	$C_{bottom} =$	22.7656	in	$r_x =$	17.4524	in
J =	3.0240	$in^4$	Z =	450.45	$in^3$	Z =	450.45	$in^3$			



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Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	16.5117	4.0000	66.0469	0.1935	0.0000	0.0000	0.1935
2	Top Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
Total		28.51		114.05	64.19		0.00	64.19
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.00		0.00	0.00		0.00	0.00

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 16.05 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 16.05 in <sup>3</sup>
I <sub>y</sub> =	64.19	in <sup>4</sup>	S <sub>left</sub> = 16.05 in <sup>3</sup>	I <sub>y</sub> =	64.19	in <sup>4</sup>	S <sub>left</sub> = 16.05 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 28.5117 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 28.5117 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.5005 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.5005 in

Non-composite Capacities*		
	AB	AI
M	1144.40 k-ft	1144.40 k-ft
V	156.29 k	156.29 k

\*Noncompact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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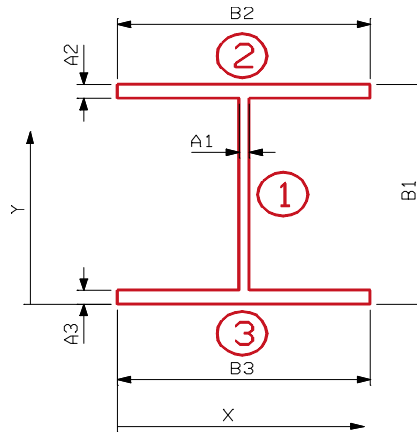
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 39.0625$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



Fascia Stringers F1A-5 Avg

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		14.0859	19.5313	275.1160	1656.2027	0.0000	0.0000	1656.2027
2	Top Flange		6.0000	38.6875	232.1250	0.2813	19.1563	2201.7715	2202.0527
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	19.1563	2201.7715	2202.0527
<b>Total</b>			<b>26.09</b>		<b>509.49</b>	<b>1656.77</b>		<b>4403.54</b>	<b>6060.31</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	19.5313	in	$S_{top} = 310.29$ in <sup>3</sup>	y-bar =	19.5313	in	$S_{top} = 310.29$ in <sup>3</sup>
$I_x =$	6060.31	in <sup>4</sup>	$S_{bottom} = 310.29$ in <sup>3</sup>	$I_x =$	6060.31	in <sup>4</sup>	$S_{bottom} = 310.29$ in <sup>3</sup>
$C_{top} =$	19.5313	in	A = 26.0859 in <sup>2</sup>	$C_{top} =$	19.5313	in	A = 26.0859 in <sup>2</sup>
$C_{bottom} =$	19.5313	in	$r_x = 15.2421$ in	$C_{bottom} =$	19.5313	in	$r_x = 15.2421$ in
J =	2.9103	in <sup>4</sup>	Z = 362.15 in <sup>3</sup>				Z = <b>362.15</b> in <sup>3</sup>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	14.0859	4.0000	56.3438	0.1651	0.0000	0.0000	0.1651
2	Top Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
Total		26.09		104.34	64.17		0.00	64.17
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.00		0.00	0.00		0.00	0.00

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 16.04 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 16.04 in <sup>3</sup>
I <sub>y</sub> =	64.17	in <sup>4</sup>	S <sub>left</sub> = 16.04 in <sup>3</sup>	I <sub>y</sub> =	64.17	in <sup>4</sup>	S <sub>left</sub> = 16.04 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 26.0859 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 26.0859 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.5684 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.5684 in

Non-composite Capacities*		
	AB	AI
M	1086.45 k-ft	1086.45 k-ft
V	183.21 k	183.21 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear





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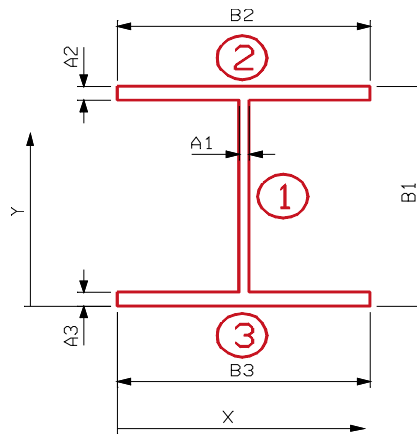
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 41.5938$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringers F1B-5 Avg**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		15.0352	20.7969	312.6843	2014.0955	0.0000	0.0000	2014.0955
2	Top Flange		6.0000	41.2188	247.3125	0.2813	20.4219	2502.3179	2502.5991
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	20.4219	2502.3179	2502.5991
<b>Total</b>			<b>27.04</b>		<b>562.25</b>	<b>2014.66</b>		<b>5004.64</b>	<b>7019.29</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	20.7969	in	$S_{top} = 337.52$	in <sup>3</sup>	y-bar =	20.7969	in	$S_{top} = 337.52$	in <sup>3</sup>		
$I_x =$	7019.29	n <sup>4</sup>	$S_{bott.} = 337.52$	in <sup>3</sup>	$I_x =$	7019.29	n <sup>4</sup>	$S_{bott.} = 337.52$	in <sup>3</sup>		
$C_{top} =$	20.7969	in	A =	27.0352	in <sup>2</sup>	$C_{top} =$	20.7969	in	A =	27.0352	in <sup>2</sup>
$C_{bottom} =$	20.7969	in	$r_x =$	16.1132	in	$C_{bottom} =$	20.7969	in	$r_x =$	16.1132	in
J =	2.9548	in <sup>4</sup>	Z =	395.77	in <sup>3</sup>	Z =	395.77	in <sup>3</sup>			



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	15.0352	4.0000	60.1406	0.1762	0.0000	0.0000	0.1762
2	Top Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>		<b>27.04</b>		<b>108.14</b>	<b>64.18</b>		<b>0.00</b>	<b>64.18</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 16.04 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 16.04 in <sup>3</sup>
I <sub>y</sub> =	64.18	in <sup>4</sup>	S <sub>left</sub> = 16.04 in <sup>3</sup>	I <sub>y</sub> =	64.18	in <sup>4</sup>	S <sub>left</sub> = 16.04 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 27.0352 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 27.0352 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.5407 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.5407 in

Non-composite Capacities*		
	AB	AI
M	1012.55 k-ft	1012.55 k-ft
V	171.64 k	171.64 k

\*Noncompact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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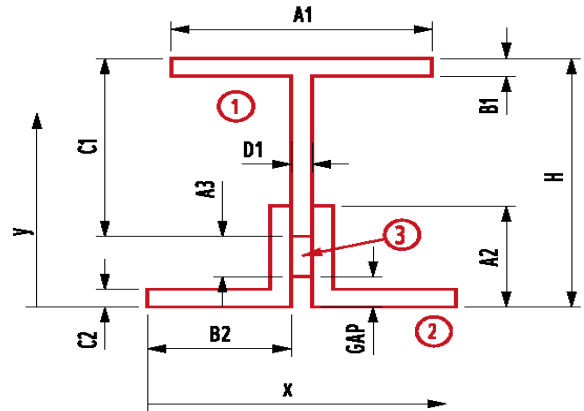
Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x76	<b>Bottom Angles:</b>	
$A_1 = b_f =$	11.0000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6800 in	$B_2 = L_h =$	6.0000 in
$C_1 = d =$	15.7500 in	$C_2 = t =$	0.7500 in
$D_1 = t_w =$	0.4250 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	H =	16.2500 in
$B_3 = t =$	0.4250 in	Gap =	0.5000 in

\*select from dropdown list

**Coped Stringer S2-5 @ FB B2**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	7.4800	15.9100	119.0068	0.2882	9.3943	660.1279	660.4161
	Web	6.4048	8.0350	51.4622	121.2125	1.5193	14.7834	135.9959
2	Horizontal Legs	7.8750	0.3750	2.9531	0.3691	6.1407	296.9545	297.3237
	Vertical Legs	9.0000	3.0000	27.0000	27.0000	3.5157	111.2429	138.2429
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.0157	0.0000	0.0000
<b>Total</b>		<b>30.76</b>		<b>200.42</b>	<b>148.87</b>		<b>1083.11</b>	<b>1231.98</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.5157 in	S <sub>top</sub> =	126.56 in <sup>3</sup>	y-bar =	6.5157 in	S <sub>top</sub> =	126.56 in <sup>3</sup>
I <sub>x</sub> =	1231.98 in <sup>4</sup>	S <sub>bott.</sub> =	189.08 in <sup>3</sup>	I <sub>x</sub> =	1231.98 in <sup>4</sup>	S <sub>bott.</sub> =	189.08 in <sup>3</sup>
C <sub>top</sub> =	9.7343 in	A =	30.7598 in <sup>2</sup>	C <sub>top</sub> =	9.7343 in	A =	30.7598 in <sup>2</sup>
C <sub>bottom</sub> =	6.5157 in	r <sub>x</sub> =	6.3286 in	C <sub>bottom</sub> =	6.5157 in	r <sub>x</sub> =	6.3286 in
J =	4.7026 in <sup>4</sup>	Z =	163.68 in <sup>3</sup>			Z =	163.68 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		7.4800	6.2125	46.4695	75.4233	0.0000	0.0000	75.4233
	Web		6.4048	6.2125	39.7895	0.0964	0.0000	0.0000	0.0964
2 (Left)	Horizontal Leg		3.9375	2.6250	10.3359	9.0439	3.5875	50.6762	59.7202
	Vertical Leg		4.5000	5.6250	25.3125	0.2109	0.5875	1.5532	1.7641
2 (Right)	Horizontal Leg		3.9375	9.8000	38.5875	9.0439	3.5875	50.6762	59.7202
	Vertical Leg		4.5000	6.8000	30.6000	0.2109	0.5875	1.5532	1.7641
3	Additional Plate		0.0000	6.2125	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>30.76</b>		<b>191.09</b>	<b>94.03</b>		<b>104.46</b>	<b>198.49</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.2125 in	S <sub>right</sub> =	31.95 in <sup>3</sup>	x-bar =	6.2125 in	S <sub>right</sub> =	31.95 in <sup>3</sup>
I <sub>y</sub> =	198.49 in <sup>4</sup>	S <sub>left</sub> =	31.95 in <sup>3</sup>	I <sub>y</sub> =	198.49 in <sup>4</sup>	S <sub>left</sub> =	31.95 in <sup>3</sup>
C <sub>right</sub> =	6.2125 in	A =	30.7598 in <sup>2</sup>	C <sub>right</sub> =	6.2125 in	A =	30.7598 in <sup>2</sup>
C <sub>left</sub> =	6.2125 in	r <sub>y</sub> =	2.5402 in	C <sub>left</sub> =	6.2125 in	r <sub>y</sub> =	2.5402 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	491.04 k-ft	491.04 k-ft
V	298.16 k	298.16 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x76	<b>Bottom Angles:</b>	
$A_1 = b_f =$	11.0000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6800 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	13.2500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.4250 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	13.7500 in
$B_3 = t =$	0.4250 in	$Gap =$	0.5000 in

\*select from dropdown list

**Coped Stringer S1-5 @ FB B3**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	7.4800	13.4100	100.3068	0.2882	6.4470	310.9010	311.1892
	Web	5.3423	6.7850	36.2472	70.3418	0.1780	0.1692	70.5110
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.7130	157.7235	157.7964
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.9630	94.2304	112.2304
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.4630	0.0000	0.0000
<b>Total</b>		<b>22.32</b>		<b>155.43</b>	<b>88.70</b>		<b>563.02</b>	<b>651.73</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.9630 in	S <sub>top</sub> =	96.03 in <sup>3</sup>	y-bar =	6.9630 in	S <sub>top</sub> =	96.03 in <sup>3</sup>
I <sub>x</sub> =	651.73 in <sup>4</sup>	S <sub>bott.</sub> =	93.60 in <sup>3</sup>	I <sub>x</sub> =	651.73 in <sup>4</sup>	S <sub>bott.</sub> =	93.60 in <sup>3</sup>
C <sub>top</sub> =	6.7870 in	A =	22.3223 in <sup>2</sup>	C <sub>top</sub> =	6.7870 in	A =	22.3223 in <sup>2</sup>
C <sub>bottom</sub> =	6.9630 in	r <sub>x</sub> =	5.4034 in	C <sub>bottom</sub> =	6.9630 in	r <sub>x</sub> =	5.4034 in
J =	2.2662 in <sup>4</sup>	Z =	110.28 in <sup>3</sup>			Z =	110.28 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		7.4800	4.2125	31.5095	75.4233	1.2875	12.3993	87.8226
	Web		5.3423	4.2125	22.5042	0.0804	1.2875	8.8556	8.9360
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.7500	24.6094	26.3958
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.7500	9.1875	9.2500
2 (Right)	Horizontal Leg		1.7500	6.6750	11.6813	1.7865	1.1750	2.4161	4.2026
	Vertical Leg		3.0000	4.6750	14.0250	0.0625	0.8250	2.0419	2.1044
3	Additional Plate		0.0000	4.2125	0.0000	0.0000	1.2875	0.0000	0.0000
<b>Total</b>			<b>22.32</b>		<b>94.03</b>	<b>79.20</b>		<b>59.51</b>	<b>138.71</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.5000 in	S <sub>right</sub> =	25.22 in <sup>3</sup>	x-bar =	5.5000 in	S <sub>right</sub> =	25.22 in <sup>3</sup>
I <sub>y</sub> =	138.71 in <sup>4</sup>	S <sub>left</sub> =	25.22 in <sup>3</sup>	I <sub>y</sub> =	138.71 in <sup>4</sup>	S <sub>left</sub> =	25.22 in <sup>3</sup>
C <sub>right</sub> =	5.5000 in	A =	22.3223 in <sup>2</sup>	C <sub>right</sub> =	5.5000 in	A =	22.3223 in <sup>2</sup>
C <sub>left</sub> =	5.5000 in	r <sub>y</sub> =	2.4928 in	C <sub>left</sub> =	5.5000 in	r <sub>y</sub> =	2.4928 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	330.84 k-ft	330.84 k-ft
V	226.39 k	226.39 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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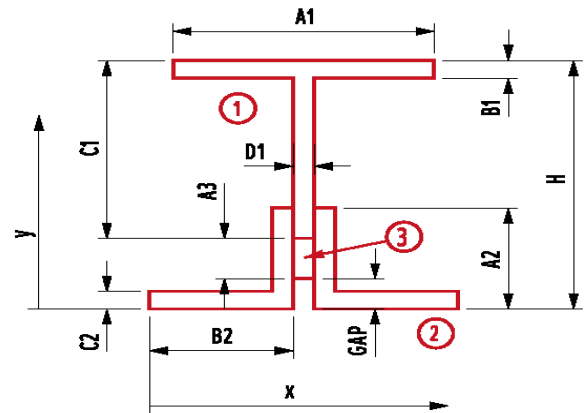
Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x76	<b>Bottom Angles:</b>	
$A_1 = b_f =$	11.0000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6800 in	$B_2 = L_h =$	6.0000 in
$C_1 = d =$	16.0000 in	$C_2 = t =$	0.7500 in
$D_1 = t_w =$	0.4250 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	16.5000 in
$B_3 = t =$	0.4250 in	$Gap =$	0.5000 in

\*select from dropdown list

**Coped Stringer S2-5 @ FB B2**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	7.4800	16.1600	120.8768	0.2882	9.5521	682.4936	682.7819
	Web	6.5110	8.1600	53.1298	127.3456	1.5521	15.6849	143.0305
2	Horizontal Legs	7.8750	0.3750	2.9531	0.3691	6.2329	305.9370	306.3061
	Vertical Legs	9.0000	3.0000	27.0000	27.0000	3.6079	117.1530	144.1530
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.1079	0.0000	0.0000
<b>Total</b>		<b>30.87</b>		<b>203.96</b>	<b>155.00</b>		<b>1121.27</b>	<b>1276.27</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar = 6.6079 in	S <sub>top</sub> = 129.02 in <sup>3</sup>			y-bar = 6.6079 in	S <sub>top</sub> = 129.02 in <sup>3</sup>		
I <sub>x</sub> = 1276.27 in <sup>4</sup>	S <sub>bottom</sub> = 193.14 in <sup>3</sup>			I <sub>x</sub> = 1276.27 in <sup>4</sup>	S <sub>bottom</sub> = 193.14 in <sup>3</sup>		
C <sub>top</sub> = 9.8921 in	A = 30.8660 in <sup>2</sup>			C <sub>top</sub> = 9.8921 in	A = 30.8660 in <sup>2</sup>		
C <sub>bottom</sub> = 6.6079 in	r <sub>x</sub> = 6.4303 in			C <sub>bottom</sub> = 6.6079 in	r <sub>x</sub> = 6.4303 in		
J = 4.7090 in <sup>4</sup>	Z = 166.79 in <sup>3</sup>				Z = 166.79 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		7.4800	6.2125	46.4695	75.4233	0.0000	0.0000	75.4233
	Web		6.5110	6.2125	40.4496	0.0980	0.0000	0.0000	0.0980
2 (Left)	Horizontal Leg		3.9375	2.6250	10.3359	9.0439	3.5875	50.6762	59.7202
	Vertical Leg		4.5000	5.6250	25.3125	0.2109	0.5875	1.5532	1.7641
2 (Right)	Horizontal Leg		3.9375	9.8000	38.5875	9.0439	3.5875	50.6762	59.7202
	Vertical Leg		4.5000	6.8000	30.6000	0.2109	0.5875	1.5532	1.7641
3	Additional Plate		0.0000	6.2125	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>30.87</b>		<b>191.76</b>	<b>94.03</b>		<b>104.46</b>	<b>198.49</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar = 6.2125 in	S <sub>right</sub> = 31.95 in <sup>3</sup>			x-bar = 6.2125 in	S <sub>right</sub> = 31.95 in <sup>3</sup>		
I <sub>y</sub> = 198.49 in <sup>4</sup>	S <sub>left</sub> = 31.95 in <sup>3</sup>			I <sub>y</sub> = 198.49 in <sup>4</sup>	S <sub>left</sub> = 31.95 in <sup>3</sup>		
C <sub>right</sub> = 6.2125 in	A = 30.8660 in <sup>2</sup>			C <sub>right</sub> = 6.2125 in	A = 30.8660 in <sup>2</sup>		
C <sub>left</sub> = 6.2125 in	r <sub>y</sub> = 2.5359 in			C <sub>left</sub> = 6.2125 in	r <sub>y</sub> = 2.5359 in		

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	500.37 k-ft	500.37 k-ft
V	300.38 k	300.38 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x76	<b>Bottom Angles:</b>	
$A_1 = b_f =$	11.0000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6800 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	14.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.4250 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	14.7500 in
$B_3 = t =$	0.4250 in	$GAP =$	0.2500 in

\*select from dropdown list

Coped Stringer S2-5 @ FB B3

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	7.4800	14.4100	107.7868	0.2882	7.0275	369.4050	369.6932
	Web	5.8735	7.1600	42.0543	93.4828	0.2225	0.2908	93.7736
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	7.1325	178.0542	178.1271
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.3825	115.2381	133.2381
3	Additional Plate	0.0000	0.2500	0.0000	0.0000	7.1325	0.0000	0.0000
<b>Total</b>		<b>22.85</b>		<b>168.72</b>	<b>111.84</b>		<b>662.99</b>	<b>774.83</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar = 7.3825 in	S <sub>top</sub> = 105.17 in <sup>3</sup>			y-bar = 7.3825 in	S <sub>top</sub> = 105.17 in <sup>3</sup>		
I <sub>x</sub> = 774.83 in <sup>4</sup>	S <sub>bottom</sub> = 104.96 in <sup>3</sup>			I <sub>x</sub> = 774.83 in <sup>4</sup>	S <sub>bottom</sub> = 104.96 in <sup>3</sup>		
C <sub>top</sub> = 7.3675 in	A = 22.8535 in <sup>2</sup>			C <sub>top</sub> = 7.3675 in	A = 22.8535 in <sup>2</sup>		
C <sub>bottom</sub> = 7.3825 in	r <sub>x</sub> = 5.8227 in			C <sub>bottom</sub> = 7.3825 in	r <sub>x</sub> = 5.8227 in		
J = 2.2982 in <sup>4</sup>	Z = 121.71 in <sup>3</sup>				Z = 121.71 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		7.4800	4.2125	31.5095	75.4233	1.2875	12.3993	87.8226
	Web		5.8735	4.2125	24.7421	0.0884	1.2875	9.7362	9.8247
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.7500	24.6094	26.3958
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.7500	9.1875	9.2500
2 (Right)	Horizontal Leg		1.7500	6.6750	11.6813	1.7865	1.1750	2.4161	4.2026
	Vertical Leg		3.0000	4.6750	14.0250	0.0625	0.8250	2.0419	2.1044
3	Additional Plate		0.0000	4.2125	0.0000	0.0000	1.2875	0.0000	0.0000
<b>Total</b>			<b>22.85</b>		<b>96.27</b>	<b>79.21</b>		<b>60.39</b>	<b>139.60</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar = 5.5000 in	S <sub>right</sub> = 25.38 in <sup>3</sup>			x-bar = 5.5000 in	S <sub>right</sub> = 25.38 in <sup>3</sup>		
I <sub>y</sub> = 139.60 in <sup>4</sup>	S <sub>left</sub> = 25.38 in <sup>3</sup>			I <sub>y</sub> = 139.60 in <sup>4</sup>	S <sub>left</sub> = 25.38 in <sup>3</sup>		
C <sub>right</sub> = 5.5000 in	A = 22.8535 in <sup>2</sup>			C <sub>right</sub> = 5.5000 in	A = 22.8535 in <sup>2</sup>		
C <sub>left</sub> = 5.5000 in	r <sub>y</sub> = 2.4715 in			C <sub>left</sub> = 5.5000 in	r <sub>y</sub> = 2.4715 in		

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	365.13 k-ft	365.13 k-ft
V	237.48 k	237.48 k

F<sub>y</sub> = 36.00 ksi

\*Compact Section



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x76	<b>Bottom Angles:</b>	
$A_1 = b_f =$	11.0000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6800 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	16.2500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.4250 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	H =	16.7500 in
$B_3 = t =$	0.4250 in	Gap =	0.5000 in

\*select from dropdown list

**Coped Stringer S3-5 @ FB B3**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	7.4800	16.4100	122.7468	0.2882	8.0851	488.9540	489.2422
	Web	6.6173	8.2850	54.8239	133.6822	0.0399	0.0106	133.6927
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	8.0749	228.2164	228.2893
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	5.3249	170.1300	188.1300
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	7.8249	0.0000	0.0000
<b>Total</b>		<b>23.60</b>		<b>196.45</b>	<b>152.04</b>		<b>887.31</b>	<b>1039.35</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	8.3249 in	S <sub>top</sub> =	123.36 in <sup>3</sup>	y-bar =	8.3249 in	S <sub>top</sub> =	123.36 in <sup>3</sup>
I <sub>x</sub> =	1039.35 in <sup>4</sup>	S <sub>bottom</sub> =	124.85 in <sup>3</sup>	I <sub>x</sub> =	1039.35 in <sup>4</sup>	S <sub>bottom</sub> =	124.85 in <sup>3</sup>
C <sub>top</sub> =	8.4251 in	A =	23.5973 in <sup>2</sup>	C <sub>top</sub> =	8.4251 in	A =	23.5973 in <sup>2</sup>
C <sub>bottom</sub> =	8.3249 in	r <sub>x</sub> =	6.6367 in	C <sub>bottom</sub> =	8.3249 in	r <sub>x</sub> =	6.6367 in
J =	2.3430 in <sup>4</sup>	Z =	143.97 in <sup>3</sup>			Z =	143.97 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		7.4800	4.2125	31.5095	75.4233	1.2875	12.3993	87.8226
	Web		6.6173	4.2125	27.8752	0.0996	1.2875	10.9691	11.0687
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.7500	24.6094	26.3958
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.7500	9.1875	9.2500
2 (Right)	Horizontal Leg		1.7500	6.6750	11.6813	1.7865	1.1750	2.4161	4.2026
	Vertical Leg		3.0000	4.6750	14.0250	0.0625	0.8250	2.0419	2.1044
3	Additional Plate		0.0000	4.2125	0.0000	0.0000	1.2875	0.0000	0.0000
<b>Total</b>			<b>23.60</b>		<b>99.40</b>	<b>79.22</b>		<b>61.62</b>	<b>140.84</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.5000 in	S <sub>right</sub> =	25.61 in <sup>3</sup>	x-bar =	5.5000 in	S <sub>right</sub> =	25.61 in <sup>3</sup>
I <sub>y</sub> =	140.84 in <sup>4</sup>	S <sub>left</sub> =	25.61 in <sup>3</sup>	I <sub>y</sub> =	140.84 in <sup>4</sup>	S <sub>left</sub> =	25.61 in <sup>3</sup>
C <sub>right</sub> =	5.5000 in	A =	23.5973 in <sup>2</sup>	C <sub>right</sub> =	5.5000 in	A =	23.5973 in <sup>2</sup>
C <sub>left</sub> =	5.5000 in	r <sub>y</sub> =	2.4431 in	C <sub>left</sub> =	5.5000 in	r <sub>y</sub> =	2.4431 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	431.91 k-ft	431.91 k-ft
V	253.01 k	253.01 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/16/2012  
Date 3/22/2012

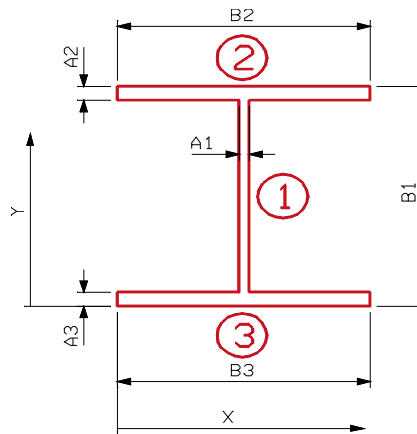
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 47.5625$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



Fascia Stringers F2A-5

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		17.2734	23.7813	410.7839	3054.1653	0.0000	0.0000	3054.1653
2	Top Flange		6.0000	47.1875	283.1250	0.2813	23.4063	3287.1152	3287.3965
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	23.4063	3287.1152	3287.3965
<b>Total</b>			<b>29.27</b>		<b>696.16</b>	<b>3054.73</b>		<b>6574.23</b>	<b>9628.96</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	23.7813	in	$S_{top} = 404.90$	in <sup>3</sup>	y-bar =	23.7813	in	$S_{top} = 404.90$	in <sup>3</sup>		
$I_x =$	9628.96	n <sup>4</sup>	$S_{bott.} = 404.90$	in <sup>3</sup>	$I_x =$	9628.96	n <sup>4</sup>	$S_{bott.} = 404.90$	in <sup>3</sup>		
$C_{top} =$	23.7813	in	A =	29.2734	in <sup>2</sup>	$C_{top} =$	23.7813	in	A =	29.2734	in <sup>2</sup>
$C_{bottom} =$	23.7813	in	$r_x =$	18.1365	in	$C_{bottom} =$	23.7813	in	$r_x =$	18.1365	in
J =	3.0597	in <sup>4</sup>	Z =	479.79	in <sup>3</sup>	J =	3.0597	in <sup>4</sup>	Z =	479.79	in <sup>3</sup>



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Date 3/16/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	17.2734	4.0000	69.0938	0.2024	0.0000	0.0000	0.2024
2	Top Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>		<b>29.27</b>		<b>117.09</b>	<b>64.20</b>		<b>0.00</b>	<b>64.20</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 16.05 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 16.05 in <sup>3</sup>
I <sub>y</sub> =	64.20	in <sup>4</sup>	S <sub>left</sub> = 16.05 in <sup>3</sup>	I <sub>y</sub> =	64.20	in <sup>4</sup>	S <sub>left</sub> = 16.05 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 29.2734 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 29.2734 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.4809 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.4809 in

Non-composite Capacities*		
	AB	AI
M	1214.69 k-ft	1214.69 k-ft
V	149.40 k	149.40 k

\*Noncompact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/16/2012  
Date 3/22/2012

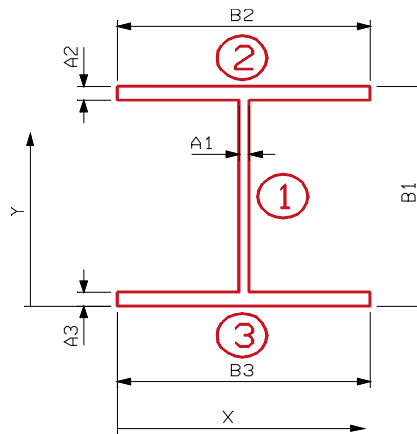
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 46.0938$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringers F2B-5 Avg**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		16.7227	23.0469	385.4050	2771.2264	0.0000	0.0000	2771.2264
2	Top Flange		6.0000	45.7188	274.3125	0.2813	22.6719	3084.0835	3084.3647
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	22.6719	3084.0835	3084.3647
<b>Total</b>			<b>28.72</b>		<b>661.97</b>	<b>2771.79</b>		<b>6168.17</b>	<b>8939.96</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	23.0469	in	$S_{top} = 387.90$	in <sup>3</sup>	y-bar =	23.0469	in	$S_{top} = 387.90$	in <sup>3</sup>		
$I_x =$	8939.96	in <sup>4</sup>	$S_{bottom} = 387.90$	in <sup>3</sup>	$I_x =$	8939.96	in <sup>4</sup>	$S_{bottom} = 387.90$	in <sup>3</sup>		
$C_{top} =$	23.0469	in	A =	28.7227	in <sup>2</sup>	$C_{top} =$	23.0469	in	A =	28.7227	in <sup>2</sup>
$C_{bottom} =$	23.0469	in	$r_x =$	17.6423	in	$C_{bottom} =$	23.0469	in	$r_x =$	17.6423	in
J =	3.0339	in <sup>4</sup>	Z =	458.49	in <sup>3</sup>	Z =	458.49	in <sup>3</sup>			



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Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	16.7227	4.0000	66.8906	0.1960	0.0000	0.0000	0.1960
2	Top Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>		<b>28.72</b>		<b>114.89</b>	<b>64.20</b>		<b>0.00</b>	<b>64.20</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 16.05 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 16.05 in <sup>3</sup>
I <sub>y</sub> =	64.20	in <sup>4</sup>	S <sub>left</sub> = 16.05 in <sup>3</sup>	I <sub>y</sub> =	64.20	in <sup>4</sup>	S <sub>left</sub> = 16.05 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 28.7227 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 28.7227 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.4950 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.4950 in

Non-composite Capacities*		
	AB	AI
M	1163.71 k-ft	1163.71 k-ft
V	154.32 k	154.32 k

\*Noncompact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear





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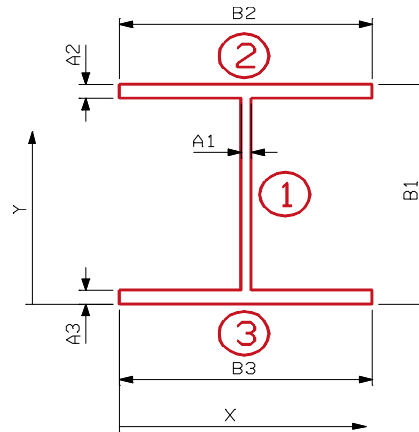
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 33.3125$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



Fascia Stringer F1-6 Avg

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		11.9297	16.6563	198.7039	1006.1053	0.0000	0.0000	1006.1053
2	Top Flange		6.0000	32.9375	197.6250	0.2813	16.2813	1590.4746	1590.7559
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	16.2813	1590.4746	1590.7559
<b>Total</b>			<b>23.93</b>		<b>398.58</b>	<b>1006.67</b>		<b>3180.95</b>	<b>4187.62</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
y-bar =	16.6563	in	$S_{top} =$	251.41	in <sup>3</sup>	y-bar =	16.6563	in	$S_{top} =$	251.41	in <sup>3</sup>
$I_x =$	4187.62	in <sup>4</sup>	$S_{bott.} =$	251.41	in <sup>3</sup>	$I_x =$	4187.62	in <sup>4</sup>	$S_{bott.} =$	251.41	in <sup>3</sup>
$C_{top} =$	16.6563	in	A =	23.9297	in <sup>2</sup>	$C_{top} =$	16.6563	in	A =	23.9297	in <sup>2</sup>
$C_{bottom} =$	16.6563	in	$r_x =$	13.2286	in	$C_{bottom} =$	16.6563	in	$r_x =$	13.2286	in
J =	2.8092	in <sup>4</sup>	Z =	290.25	in <sup>3</sup>	J =	2.8092	in <sup>4</sup>	Z =	290.25	in <sup>3</sup>



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Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	11.9297	4.0000	47.7188	0.1398	0.0000	0.0000	0.1398
2	Top Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>		<b>23.93</b>		<b>95.72</b>	<b>64.14</b>		<b>0.00</b>	<b>64.14</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000 in	S <sub>right</sub> =	16.03 in <sup>3</sup>	x-bar =	4.0000 in	S <sub>right</sub> =	16.03 in <sup>3</sup>
I <sub>y</sub> =	64.14 in <sup>4</sup>	S <sub>left</sub> =	16.03 in <sup>3</sup>	I <sub>y</sub> =	64.14 in <sup>4</sup>	S <sub>left</sub> =	16.03 in <sup>3</sup>
C <sub>right</sub> =	4.0000 in	A =	23.9297 in <sup>2</sup>	C <sub>right</sub> =	4.0000 in	A =	23.9297 in <sup>2</sup>
C <sub>left</sub> =	4.0000 in	r <sub>y</sub> =	1.6372 in	C <sub>left</sub> =	4.0000 in	r <sub>y</sub> =	1.6372 in

Non-composite Capacities*		
	AB	AI
M	870.76 k-ft	870.76 k-ft
V	207.62 k	207.62 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Job No. P402110046  
Sheet No. \_\_\_\_\_

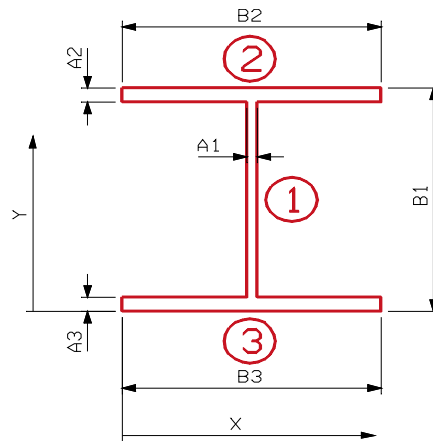
Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 15.8750$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.7500$  in

$d_o = 14.5000$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F1-6 @ FB C1**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		5.3906	7.9375	42.7881	92.8268	0.2369	0.3026	93.1295
2	Top Flange		6.0000	15.5000	93.0000	0.2813	7.7994	364.9881	365.2693
3	Bottom Flange		6.5625	0.3750	2.4609	0.3076	7.3256	352.1684	352.4760
<b>Total</b>			<b>17.95</b>		<b>138.25</b>	<b>93.42</b>		<b>717.46</b>	<b>810.87</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
y-bar =	7.7006	in	$S_{top} =$	99.20	in <sup>3</sup>	y-bar =	7.7006	in	$S_{top} =$	99.20	in <sup>3</sup>
$I_x =$	810.87	in <sup>4</sup>	$S_{bott.} =$	105.30	in <sup>3</sup>	$I_x =$	810.87	in <sup>4</sup>	$S_{bott.} =$	105.30	in <sup>3</sup>
$C_{top} =$	8.1744	in	A =	17.9531	in <sup>2</sup>	$C_{top} =$	8.1744	in	A =	17.9531	in <sup>2</sup>
$C_{bottom} =$	7.7006	in	$r_x =$	6.7206	in	$C_{bottom} =$	7.7006	in	$r_x =$	6.7206	in
J =	2.6082	in <sup>4</sup>	Z =	114.17	in <sup>3</sup>	Z =	114.17	in <sup>3</sup>			



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Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		5.3906	4.3750	23.5840	0.0632	0.0000	0.0000	0.0632
2	Top Flange		6.0000	4.3750	26.2500	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange		6.5625	4.3750	28.7109	41.8701	0.0000	0.0000	41.8701
<b>Total</b>			<b>17.95</b>		<b>78.54</b>	<b>73.93</b>		<b>0.00</b>	<b>73.93</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	4.3750	in	S <sub>right</sub> =	16.90	in <sup>3</sup>	x-bar =	4.3750	in	S <sub>right</sub> =	16.90	in <sup>3</sup>
I <sub>y</sub> =	73.93	in <sup>4</sup>	S <sub>left</sub> =	16.90	in <sup>3</sup>	I <sub>y</sub> =	73.93	in <sup>4</sup>	S <sub>left</sub> =	16.90	in <sup>3</sup>
C <sub>right</sub> =	4.3750	in	A =	17.9531	in <sup>2</sup>	C <sub>right</sub> =	4.3750	in	A =	17.9531	in <sup>2</sup>
C <sub>left</sub> =	4.3750	in	r <sub>y</sub> =	2.0293	in	C <sub>left</sub> =	4.3750	in	r <sub>y</sub> =	2.0293	in

Non-composite Capacities*		
	AB	AI
M	342.50 k-ft	342.50 k-ft
V	112.56 k	112.56 k

\*Compact Section

F <sub>y</sub> =	36.00 ksi
------------------	-----------

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x93	<b>Bottom Angles:</b>	
$A_1 = b_f =$	8.4200 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.9300 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	13.2500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5800 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	13.7500 in
$B_3 = t =$	0.5800 in	$Gap =$	0.5000 in

\*select from dropdown list

Coped Stringer S1-6 @ FB B3

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		7.8306	13.2850	104.0295	0.5644	6.3193	312.7023	313.2666
	Web		7.1456	6.6600	47.5897	90.3814	0.3057	0.6678	91.0492
2	Horizontal Legs		3.5000	0.2500	0.8750	0.0729	6.7157	157.8529	157.9258
	Vertical Legs		6.0000	3.0000	18.0000	18.0000	3.9657	94.3613	112.3613
3	Additional Plate		0.0000	0.5000	0.0000	0.0000	6.4657	0.0000	0.0000
<b>Total</b>			<b>24.48</b>		<b>170.49</b>	<b>109.02</b>		<b>565.58</b>	<b>674.60</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.9657 in	S <sub>top</sub> =	99.44 in <sup>3</sup>	y-bar =	6.9657 in	S <sub>top</sub> =	99.44 in <sup>3</sup>
I <sub>x</sub> =	674.60 in <sup>4</sup>	S <sub>bottom</sub> =	96.85 in <sup>3</sup>	I <sub>x</sub> =	674.60 in <sup>4</sup>	S <sub>bottom</sub> =	96.85 in <sup>3</sup>
C <sub>top</sub> =	6.7843 in	A =	24.4762 in <sup>2</sup>	C <sub>top</sub> =	6.7843 in	A =	24.4762 in <sup>2</sup>
C <sub>bottom</sub> =	6.9657 in	r <sub>x</sub> =	5.2499 in	C <sub>bottom</sub> =	6.9657 in	r <sub>x</sub> =	5.2499 in
J =	3.8505 in <sup>4</sup>	Z =	117.30 in <sup>3</sup>			Z =	117.30 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	7.8306	4.2900	33.5933	46.2634	0.0000	0.0000	46.2634
	Web	7.1456	4.2900	30.6546	0.2003	0.0000	0.0000	0.2003
2 (Left)	Horizontal Leg	1.7500	1.7500	3.0625	1.7865	2.5400	11.2903	13.0768
	Vertical Leg	3.0000	3.7500	11.2500	0.0625	0.5400	0.8748	0.9373
2 (Right)	Horizontal Leg	1.7500	6.8300	11.9525	1.7865	2.5400	11.2903	13.0768
	Vertical Leg	3.0000	4.8300	14.4900	0.0625	0.5400	0.8748	0.9373
3	Additional Plate	0.0000	4.2900	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>24.48</b>		<b>105.00</b>	<b>50.16</b>		<b>24.33</b>	<b>74.49</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.2900 in	S <sub>right</sub> =	17.36 in <sup>3</sup>	x-bar =	4.2900 in	S <sub>right</sub> =	17.36 in <sup>3</sup>
I <sub>y</sub> =	74.49 in <sup>4</sup>	S <sub>left</sub> =	17.36 in <sup>3</sup>	I <sub>y</sub> =	74.49 in <sup>4</sup>	S <sub>left</sub> =	17.36 in <sup>3</sup>
C <sub>right</sub> =	4.2900 in	A =	24.4762 in <sup>2</sup>	C <sub>right</sub> =	4.2900 in	A =	24.4762 in <sup>2</sup>
C <sub>left</sub> =	4.2900 in	r <sub>y</sub> =	1.7445 in	C <sub>left</sub> =	4.2900 in	r <sub>y</sub> =	1.7445 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	351.90 k-ft	351.90 k-ft
V	264.04 k	264.04 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x93	<b>Bottom Angles:</b>	
$A_1 = b_f =$	8.4200 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.9300 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	14.2500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5800 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	14.7500 in
$B_3 = t =$	0.5800 in	$Gap =$	0.5000 in

\*select from dropdown list

Coped Stringer S2-6 @ FB B3

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		7.8306	14.2850	111.8601	0.5644	6.8597	368.4700	369.0344
	Web		7.7256	7.1600	55.3153	114.2245	0.2653	0.5439	114.7684
2	Horizontal Legs		3.5000	0.2500	0.8750	0.0729	7.1753	180.1985	180.2714
	Vertical Legs		6.0000	3.0000	18.0000	18.0000	4.4253	117.5010	135.5010
3	Additional Plate		0.0000	0.5000	0.0000	0.0000	6.9253	0.0000	0.0000
<b>Total</b>			<b>25.06</b>		<b>186.05</b>	<b>132.86</b>		<b>666.71</b>	<b>799.58</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	7.4253	in	S <sub>top</sub> =	109.16	in <sup>3</sup>	y-bar =	7.4253	in	S <sub>top</sub> =	109.16	in <sup>3</sup>
I <sub>x</sub> =	799.58	in <sup>4</sup>	S <sub>bott.</sub> =	107.68	in <sup>3</sup>	I <sub>x</sub> =	799.58	in <sup>4</sup>	S <sub>bott.</sub> =	107.68	in <sup>3</sup>
C <sub>top</sub> =	7.3247	in	A =	25.0562	in <sup>2</sup>	C <sub>top</sub> =	7.3247	in	A =	25.0562	in <sup>2</sup>
C <sub>bottom</sub> =	7.4253	in	r <sub>x</sub> =	5.6490	in	C <sub>bottom</sub> =	7.4253	in	r <sub>x</sub> =	5.6490	in
J =	3.9155	in <sup>4</sup>	Z =	129.49	in <sup>3</sup>	Z =	129.49	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		7.8306	4.2900	33.5933	46.2634	0.0000	0.0000	46.2634
	Web		7.7256	4.2900	33.1428	0.2166	0.0000	0.0000	0.2166
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.5400	11.2903	13.0768
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.5400	0.8748	0.9373
2 (Right)	Horizontal Leg		1.7500	6.8300	11.9525	1.7865	2.5400	11.2903	13.0768
	Vertical Leg		3.0000	4.8300	14.4900	0.0625	0.5400	0.8748	0.9373
3	Additional Plate		0.0000	4.2900	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>25.06</b>		<b>107.49</b>	<b>50.18</b>		<b>24.33</b>	<b>74.51</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	4.2900	in	S <sub>right</sub> =	17.37	in <sup>3</sup>	x-bar =	4.2900	in	S <sub>right</sub> =	17.37	in <sup>3</sup>
I <sub>y</sub> =	74.51	n <sup>4</sup>	S <sub>left</sub> =	17.37	in <sup>3</sup>	I <sub>y</sub> =	74.51	n <sup>4</sup>	S <sub>left</sub> =	17.37	in <sup>3</sup>
C <sub>right</sub> =	4.2900	in	A =	25.0562	in <sup>2</sup>	C <sub>right</sub> =	4.2900	in	A =	25.0562	in <sup>2</sup>
C <sub>left</sub> =	4.2900	in	r <sub>y</sub> =	1.7244	in	C <sub>left</sub> =	4.2900	in	r <sub>y</sub> =	1.7244	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	388.47 k-ft	388.47 k-ft
V	276.15 k	276.15 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x93	<b>Bottom Angles:</b>	
$A_1 = b_f =$	8.4200 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.9300 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	16.2500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5800 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	16.7500 in
$B_3 = t =$	0.5800 in	$Gap =$	0.5000 in

\*select from dropdown list

**Coped Stringer S3-6 @ FB B3**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		7.8306	16.2850	127.5213	0.5644	7.9351	493.0593	493.6237
	Web		8.8856	8.1600	72.5065	173.7893	0.1899	0.3205	174.1098
2	Horizontal Legs		3.5000	0.2500	0.8750	0.0729	8.0999	229.6297	229.7026
	Vertical Legs		6.0000	3.0000	18.0000	18.0000	5.3499	171.7290	189.7290
3	Additional Plate		0.0000	0.5000	0.0000	0.0000	7.8499	0.0000	0.0000
<b>Total</b>			<b>26.22</b>		<b>218.90</b>	<b>192.43</b>		<b>894.74</b>	<b>1087.17</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	8.3499 in	S <sub>top</sub> =	129.42 in <sup>3</sup>	y-bar =	8.3499 in	S <sub>top</sub> =	129.42 in <sup>3</sup>
I <sub>x</sub> =	1087.17 in <sup>4</sup>	S <sub>bottom</sub> =	130.20 in <sup>3</sup>	I <sub>x</sub> =	1087.17 in <sup>4</sup>	S <sub>bottom</sub> =	130.20 in <sup>3</sup>
C <sub>top</sub> =	8.4001 in	A =	26.2162 in <sup>2</sup>	C <sub>top</sub> =	8.4001 in	A =	26.2162 in <sup>2</sup>
C <sub>bottom</sub> =	8.3499 in	r <sub>x</sub> =	6.4397 in	C <sub>bottom</sub> =	8.3499 in	r <sub>x</sub> =	6.4397 in
J =	4.0456 in <sup>4</sup>	Z =	155.10 in <sup>3</sup>			Z =	155.10 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		7.8306	4.2900	33.5933	46.2634	0.0000	0.0000	46.2634
	Web		8.8856	4.2900	38.1192	0.2491	0.0000	0.0000	0.2491
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.5400	11.2903	13.0768
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.5400	0.8748	0.9373
2 (Right)	Horizontal Leg		1.7500	6.8300	11.9525	1.7865	2.5400	11.2903	13.0768
	Vertical Leg		3.0000	4.8300	14.4900	0.0625	0.5400	0.8748	0.9373
3	Additional Plate		0.0000	4.2900	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>26.22</b>		<b>112.47</b>	<b>50.21</b>		<b>24.33</b>	<b>74.54</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.2900 in	S <sub>right</sub> =	17.38 in <sup>3</sup>	x-bar =	4.2900 in	S <sub>right</sub> =	17.38 in <sup>3</sup>
I <sub>y</sub> =	74.54 in <sup>4</sup>	S <sub>left</sub> =	17.38 in <sup>3</sup>	I <sub>y</sub> =	74.54 in <sup>4</sup>	S <sub>left</sub> =	17.38 in <sup>3</sup>
C <sub>right</sub> =	4.2900 in	A =	26.2162 in <sup>2</sup>	C <sub>right</sub> =	4.2900 in	A =	26.2162 in <sup>2</sup>
C <sub>left</sub> =	4.2900 in	r <sub>y</sub> =	1.6862 in	C <sub>left</sub> =	4.2900 in	r <sub>y</sub> =	1.6862 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	465.30 k-ft	465.30 k-ft
V	300.37 k	300.37 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x93	<b>Bottom Angles:</b>	
$A_1 = b_f =$	8.4200 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.9300 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	16.2500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5800 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	16.7500 in
$B_3 = t =$	0.5800 in	$Gap =$	0.5000 in

\*select from dropdown list

**Coped Stringer S4-6 @ FB B3**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		7.8306	16.2850	127.5213	0.5644	7.9351	493.0593	493.6237
	Web		8.8856	8.1600	72.5065	173.7893	0.1899	0.3205	174.1098
2	Horizontal Legs		3.5000	0.2500	0.8750	0.0729	8.0999	229.6297	229.7026
	Vertical Legs		6.0000	3.0000	18.0000	18.0000	5.3499	171.7290	189.7290
3	Additional Plate		0.0000	0.5000	0.0000	0.0000	7.8499	0.0000	0.0000
<b>Total</b>			<b>26.22</b>		<b>218.90</b>	<b>192.43</b>		<b>894.74</b>	<b>1087.17</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	8.3499 in	S <sub>top</sub> =	129.42 in <sup>3</sup>	y-bar =	8.3499 in	S <sub>top</sub> =	129.42 in <sup>3</sup>
I <sub>x</sub> =	1087.17 in <sup>4</sup>	S <sub>bottom</sub> =	130.20 in <sup>3</sup>	I <sub>x</sub> =	1087.17 in <sup>4</sup>	S <sub>bottom</sub> =	130.20 in <sup>3</sup>
C <sub>top</sub> =	8.4001 in	A =	26.2162 in <sup>2</sup>	C <sub>top</sub> =	8.4001 in	A =	26.2162 in <sup>2</sup>
C <sub>bottom</sub> =	8.3499 in	r <sub>x</sub> =	6.4397 in	C <sub>bottom</sub> =	8.3499 in	r <sub>x</sub> =	6.4397 in
J =	4.0456 in <sup>4</sup>	Z =	155.10 in <sup>3</sup>			Z =	155.10 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		7.8306	4.2900	33.5933	46.2634	0.0000	0.0000	46.2634
	Web		8.8856	4.2900	38.1192	0.2491	0.0000	0.0000	0.2491
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.5400	11.2903	13.0768
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.5400	0.8748	0.9373
2 (Right)	Horizontal Leg		1.7500	6.8300	11.9525	1.7865	2.5400	11.2903	13.0768
	Vertical Leg		3.0000	4.8300	14.4900	0.0625	0.5400	0.8748	0.9373
3	Additional Plate		0.0000	4.2900	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>26.22</b>		<b>112.47</b>	<b>50.21</b>		<b>24.33</b>	<b>74.54</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.2900 in	S <sub>right</sub> =	17.38 in <sup>3</sup>	x-bar =	4.2900 in	S <sub>right</sub> =	17.38 in <sup>3</sup>
I <sub>y</sub> =	74.54 in <sup>4</sup>	S <sub>left</sub> =	17.38 in <sup>3</sup>	I <sub>y</sub> =	74.54 in <sup>4</sup>	S <sub>left</sub> =	17.38 in <sup>3</sup>
C <sub>right</sub> =	4.2900 in	A =	26.2162 in <sup>2</sup>	C <sub>right</sub> =	4.2900 in	A =	26.2162 in <sup>2</sup>
C <sub>left</sub> =	4.2900 in	r <sub>y</sub> =	1.6862 in	C <sub>left</sub> =	4.2900 in	r <sub>y</sub> =	1.6862 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	465.30 k-ft	465.30 k-ft
V	300.37 k	300.37 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x101	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	17.7500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	18.2500 in
$B_3 = t =$	0.5000 in	$Gap =$	0.5000 in

\*select from dropdown list

**Coped Stringer S5-6 @ FB B3**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	17.8500	175.6440	0.5248	8.1221	649.1268	649.6516
	Web		8.4750	8.9750	76.0631	202.9074	0.7529	4.8044	207.7118
2	Horizontal Legs		3.5000	0.2500	0.8750	0.0729	9.4779	314.4085	314.4814
	Vertical Legs		6.0000	3.0000	18.0000	18.0000	6.7279	271.5895	289.5895
3	Additional Plate		0.0000	0.5000	0.0000	0.0000	9.2279	0.0000	0.0000
<b>Total</b>			<b>27.82</b>		<b>270.58</b>	<b>221.51</b>		<b>1239.93</b>	<b>1461.43</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	9.7279 in	S <sub>top</sub> =	171.49 in <sup>3</sup>	y-bar =	9.7279 in	S <sub>top</sub> =	171.49 in <sup>3</sup>
I <sub>x</sub> =	1461.43 in <sup>4</sup>	S <sub>bottom</sub> =	150.23 in <sup>3</sup>	I <sub>x</sub> =	1461.43 in <sup>4</sup>	S <sub>bottom</sub> =	150.23 in <sup>3</sup>
C <sub>top</sub> =	8.5221 in	A =	27.8150 in <sup>2</sup>	C <sub>top</sub> =	8.5221 in	A =	27.8150 in <sup>2</sup>
C <sub>bottom</sub> =	9.7279 in	r <sub>x</sub> =	7.2485 in	C <sub>bottom</sub> =	9.7279 in	r <sub>x</sub> =	7.2485 in
J =	3.5971 in <sup>4</sup>	Z =	189.57 in <sup>3</sup>			Z =	189.57 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	4.2500	41.8200	124.0578	1.9000	35.5224	159.5802
	Web		8.4750	4.2500	36.0188	0.1766	1.9000	30.5948	30.7713
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.4000	33.8800	35.6665
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.4000	17.2800	17.3425
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.6000	0.6300	2.4165
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.4000	5.8800	5.9425
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	1.9000	0.0000	0.0000
<b>Total</b>			<b>27.82</b>		<b>118.21</b>	<b>127.93</b>		<b>123.79</b>	<b>251.72</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.1500 in	S <sub>right</sub> =	40.93 in <sup>3</sup>	x-bar =	6.1500 in	S <sub>right</sub> =	40.93 in <sup>3</sup>
I <sub>y</sub> =	251.72 in <sup>4</sup>	S <sub>left</sub> =	40.93 in <sup>3</sup>	I <sub>y</sub> =	251.72 in <sup>4</sup>	S <sub>left</sub> =	40.93 in <sup>3</sup>
C <sub>right</sub> =	6.1500 in	A =	27.8150 in <sup>2</sup>	C <sub>right</sub> =	6.1500 in	A =	27.8150 in <sup>2</sup>
C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.0083 in	C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.0083 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	568.71 k-ft	568.71 k-ft
V	291.80 k	291.80 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x101	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	18.3750 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	18.8750 in
$B_3 = t =$	0.5000 in	$Gap =$	0.5000 in

\*select from dropdown list

**Coped Stringer S6-6 @ FB B3**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	18.4750	181.7940	0.5248	8.4392	700.8002	701.3250
	Web	8.7875	9.2875	81.6139	226.1907	0.7483	4.9210	231.1117
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	9.7858	335.1689	335.2418
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	7.0358	297.0177	315.0177
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	9.5358	0.0000	0.0000
<b>Total</b>		<b>28.13</b>		<b>282.28</b>	<b>244.79</b>		<b>1337.91</b>	<b>1582.70</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	10.0358 in	S <sub>top</sub> =	179.05 in <sup>3</sup>	y-bar =	10.0358 in	S <sub>top</sub> =	179.05 in <sup>3</sup>
I <sub>x</sub> =	1582.70 in <sup>4</sup>	S <sub>bott.</sub> =	157.70 in <sup>3</sup>	I <sub>x</sub> =	1582.70 in <sup>4</sup>	S <sub>bott.</sub> =	157.70 in <sup>3</sup>
C <sub>top</sub> =	8.8392 in	A =	28.1275 in <sup>2</sup>	C <sub>top</sub> =	8.8392 in	A =	28.1275 in <sup>2</sup>
C <sub>bottom</sub> =	10.0358 in	r <sub>x</sub> =	7.5012 in	C <sub>bottom</sub> =	10.0358 in	r <sub>x</sub> =	7.5012 in
J =	3.6232 in <sup>4</sup>	Z =	198.31 in <sup>3</sup>	Z =	198.31 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	4.2500	41.8200	124.0578	1.9000	35.5224	159.5802
	Web		8.7875	4.2500	37.3469	0.1831	1.9000	31.7229	31.9059
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.4000	33.8800	35.6665
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.4000	17.2800	17.3425
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.6000	0.6300	2.4165
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.4000	5.8800	5.9425
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	1.9000	0.0000	0.0000
<b>Total</b>			<b>28.13</b>		<b>119.54</b>	<b>127.94</b>		<b>124.92</b>	<b>252.85</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.1500 in	S <sub>right</sub> =	41.11 in <sup>3</sup>	x-bar =	6.1500 in	S <sub>right</sub> =	41.11 in <sup>3</sup>
I <sub>y</sub> =	252.85 in <sup>4</sup>	S <sub>left</sub> =	41.11 in <sup>3</sup>	I <sub>y</sub> =	252.85 in <sup>4</sup>	S <sub>left</sub> =	41.11 in <sup>3</sup>
C <sub>right</sub> =	6.1500 in	A =	28.1275 in <sup>2</sup>	C <sub>right</sub> =	6.1500 in	A =	28.1275 in <sup>2</sup>
C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	2.9983 in	C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	2.9983 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	594.93 k-ft	594.93 k-ft
V	298.32 k	298.32 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





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Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x101	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	19.2500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	19.7500 in
$B_3 = t =$	0.5000 in	$GAP =$	0.5000 in

\*select from dropdown list

**Coped Stringer S7-6 @ FB B3**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	19.3500	190.4040	0.5248	8.8829	776.4378	776.9626
	Web		9.2250	9.7250	89.7131	261.6844	0.7421	5.0800	266.7645
2	Horizontal Legs		3.5000	0.2500	0.8750	0.0729	10.2171	365.3605	365.4334
	Vertical Legs		6.0000	3.0000	18.0000	18.0000	7.4671	334.5437	352.5437
3	Additional Plate		0.0000	0.5000	0.0000	0.0000	9.9671	0.0000	0.0000
<b>Total</b>			<b>28.57</b>		<b>298.99</b>	<b>280.28</b>		<b>1481.42</b>	<b>1761.70</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	10.4671 in	S <sub>top</sub> =	189.78 in <sup>3</sup>	y-bar =	10.4671 in	S <sub>top</sub> =	189.78 in <sup>3</sup>
I <sub>x</sub> =	1761.70 in <sup>4</sup>	S <sub>bott.</sub> =	168.31 in <sup>3</sup>	I <sub>x</sub> =	1761.70 in <sup>4</sup>	S <sub>bott.</sub> =	168.31 in <sup>3</sup>
C <sub>top</sub> =	9.2829 in	A =	28.5650 in <sup>2</sup>	C <sub>top</sub> =	9.2829 in	A =	28.5650 in <sup>2</sup>
C <sub>bottom</sub> =	10.4671 in	r <sub>x</sub> =	7.8532 in	C <sub>bottom</sub> =	10.4671 in	r <sub>x</sub> =	7.8532 in
J =	3.6596 in <sup>4</sup>	Z =	210.72 in <sup>3</sup>			Z =	210.72 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	4.2500	41.8200	124.0578	1.9000	35.5224	159.5802
	Web		9.2250	4.2500	39.2063	0.1922	1.9000	33.3023	33.4944
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.4000	33.8800	35.6665
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.4000	17.2800	17.3425
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.6000	0.6300	2.4165
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.4000	5.8800	5.9425
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	1.9000	0.0000	0.0000
<b>Total</b>			<b>28.57</b>		<b>121.40</b>	<b>127.95</b>		<b>126.49</b>	<b>254.44</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.1500 in	S <sub>right</sub> =	41.37 in <sup>3</sup>	x-bar =	6.1500 in	S <sub>right</sub> =	41.37 in <sup>3</sup>
I <sub>y</sub> =	254.44 in <sup>4</sup>	S <sub>left</sub> =	41.37 in <sup>3</sup>	I <sub>y</sub> =	254.44 in <sup>4</sup>	S <sub>left</sub> =	41.37 in <sup>3</sup>
C <sub>right</sub> =	6.1500 in	A =	28.5650 in <sup>2</sup>	C <sub>right</sub> =	6.1500 in	A =	28.5650 in <sup>2</sup>
C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	2.9845 in	C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	2.9845 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	632.16 k-ft	632.16 k-ft
V	307.46 k	307.46 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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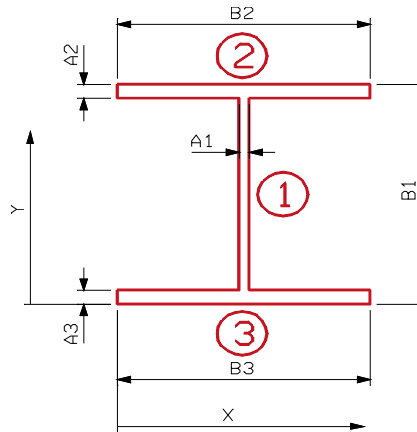
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 44.2500$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



Fascia Stringer F2-6 Avg

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		16.0313	22.1250	354.6914	2441.5093	0.0000	0.0000	2441.5093
2	Top Flange		6.0000	43.8750	263.2500	0.2813	21.7500	2838.3750	2838.6563
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	21.7500	2838.3750	2838.6563
<b>Total</b>			<b>28.03</b>		<b>620.19</b>	<b>2442.07</b>		<b>5676.75</b>	<b>8118.82</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	22.1250 in	$S_{top} =$	366.95 in <sup>3</sup>	y-bar =	22.1250 in	$S_{top} =$	366.95 in <sup>3</sup>
$I_x =$	8118.82 in <sup>4</sup>	$S_{bottom} =$	366.95 in <sup>3</sup>	$I_x =$	8118.82 in <sup>4</sup>	$S_{bottom} =$	366.95 in <sup>3</sup>
$C_{top} =$	22.1250 in	A =	28.0313 in <sup>2</sup>	$C_{top} =$	22.1250 in	A =	28.0313 in <sup>2</sup>
$C_{bottom} =$	22.1250 in	$r_x =$	17.0187 in	$C_{bottom} =$	22.1250 in	$r_x =$	17.0187 in
J =	3.0015 in <sup>4</sup>	Z =	432.33 in <sup>3</sup>			Z =	432.33 in <sup>3</sup>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	16.0313	4.0000	64.1250	0.1879	0.0000	0.0000	0.1879
2	Top Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>		<b>28.03</b>		<b>112.13</b>	<b>64.19</b>		<b>0.00</b>	<b>64.19</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 16.05 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 16.05 in <sup>3</sup>
I <sub>y</sub> =	64.19	in <sup>4</sup>	S <sub>left</sub> = 16.05 in <sup>3</sup>	I <sub>y</sub> =	64.19	in <sup>4</sup>	S <sub>left</sub> = 16.05 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 28.0313 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 28.0313 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.5132 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.5132 in

Non-composite Capacities*		
	AB	AI
M	1100.86 k-ft	1100.86 k-ft
V	160.98 k	160.98 k

\*Noncompact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

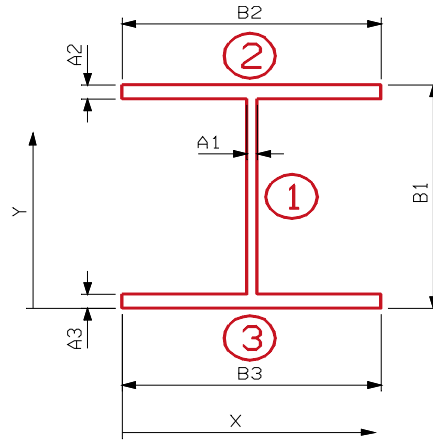
Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 19.9375$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.7500$  in

$d_o = 14.5000$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



Fascia Stringer F2-6 @ FB C1

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		6.9141	9.9688	68.9246	195.8647	0.2771	0.5308	196.3955
2	Top Flange		6.0000	19.5625	117.3750	0.2813	9.8708	584.5992	584.8805
3	Bottom Flange		6.5625	0.3750	2.4609	0.3076	9.3167	569.6277	569.9354
<b>Total</b>			<b>19.48</b>		<b>188.76</b>	<b>196.45</b>		<b>1154.76</b>	<b>1351.21</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	9.6917	in	$S_{top} = 131.88$	$in^3$	y-bar =	9.6917	in	$S_{top} = 131.88$	$in^3$		
$I_x =$	1351.21	$in^4$	$S_{bott.} = 139.42$	$in^3$	$I_x =$	1351.21	$in^4$	$S_{bott.} = 139.42$	$in^3$		
$C_{top} =$	10.2458	in	A =	19.4766	$in^2$	$C_{top} =$	10.2458	in	A =	19.4766	$in^2$
$C_{bottom} =$	9.6917	in	$r_x =$	8.3292	in	$C_{bottom} =$	9.6917	in	$r_x =$	8.3292	in
J =	2.6796	$in^4$	Z =	152.18	$in^3$	Z =	152.18	$in^3$			



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Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		6.9141	4.3750	30.2490	0.0810	0.0000	0.0000	0.0810
2	Top Flange		6.0000	4.3750	26.2500	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange		6.5625	4.3750	28.7109	41.8701	0.0000	0.0000	41.8701
<b>Total</b>			<b>19.48</b>		<b>85.21</b>	<b>73.95</b>		<b>0.00</b>	<b>73.95</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.3750	in	S <sub>right</sub> = 16.90 in <sup>3</sup>	x-bar =	4.3750	in	S <sub>right</sub> = 16.90 in <sup>3</sup>
I <sub>y</sub> =	73.95	in <sup>4</sup>	S <sub>left</sub> = 16.90 in <sup>3</sup>	I <sub>y</sub> =	73.95	in <sup>4</sup>	S <sub>left</sub> = 16.90 in <sup>3</sup>
C <sub>right</sub> =	4.3750	in	A = 19.4766 in <sup>2</sup>	C <sub>right</sub> =	4.3750	in	A = 19.4766 in <sup>2</sup>
C <sub>left</sub> =	4.3750	in	r <sub>y</sub> = 1.9486 in	C <sub>left</sub> =	4.3750	in	r <sub>y</sub> = 1.9486 in

Non-composite Capacities*		
	AB	AI
M	456.54 k-ft	456.54 k-ft
V	144.37 k	144.37 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Job No. P402110046  
Sheet No. \_\_\_\_\_

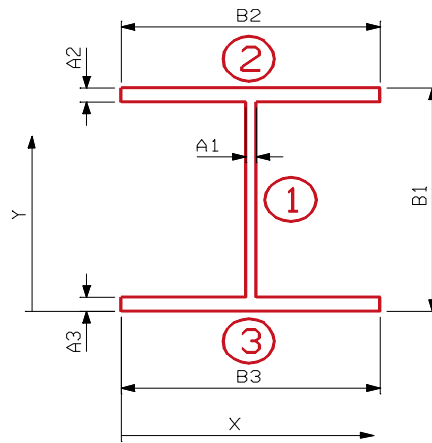
Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 15.9375$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 9.1250$  in
- $A_3 = t_f = 1.0000$  in
- $B_3 = b_f = 8.0000$  in

$d_o = N/A$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



Fascia Stringer F1-7 @ FB C1

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		5.3203	7.9688	42.3962	89.2417	0.3858	0.7921	90.0337
2	Top Flange		6.8438	15.5625	106.5059	0.3208	7.9796	435.7689	436.0897
3	Bottom Flange		8.0000	0.5000	4.0000	0.6667	7.0829	401.3399	402.0066
<b>Total</b>			<b>20.16</b>		<b>152.90</b>	<b>90.23</b>		<b>837.90</b>	<b>928.13</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
y-bar =	7.5829	in	$S_{top} =$	111.09	in <sup>3</sup>	y-bar =	7.5829	in	$S_{top} =$	111.09	in <sup>3</sup>
$I_x =$	928.13	in <sup>4</sup>	$S_{bott.} =$	122.40	in <sup>3</sup>	$I_x =$	928.13	in <sup>4</sup>	$S_{bott.} =$	122.40	in <sup>3</sup>
$C_{top} =$	8.3546	in	A =	20.1641	in <sup>2</sup>	$C_{top} =$	8.3546	in	A =	20.1641	in <sup>2</sup>
$C_{bottom} =$	7.5829	in	$r_x =$	6.7845	in	$C_{bottom} =$	7.5829	in	$r_x =$	6.7845	in
J =	4.1993	in <sup>4</sup>	Z =	129.84	in <sup>3</sup>	Z =	129.84	in <sup>3</sup>			



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Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		5.3203	4.5625	24.2739	0.0623	0.0000	0.0000	0.0623
2	Top Flange		6.8438	4.5625	31.2246	47.4874	0.0000	0.0000	47.4874
3	Bottom Flange		8.0000	4.5625	36.5000	42.6667	0.0000	0.0000	42.6667
<b>Total</b>			<b>20.16</b>		<b>92.00</b>	<b>90.22</b>		<b>0.00</b>	<b>90.22</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	4.5625	in	S <sub>right</sub> =	19.77	in <sup>3</sup>	x-bar =	4.5625	in	S <sub>right</sub> =	19.77	in <sup>3</sup>
I <sub>y</sub> =	90.22	in <sup>4</sup>	S <sub>left</sub> =	19.77	in <sup>3</sup>	I <sub>y</sub> =	90.22	in <sup>4</sup>	S <sub>left</sub> =	19.77	in <sup>3</sup>
C <sub>right</sub> =	4.5625	in	A =	20.1641	in <sup>2</sup>	C <sub>right</sub> =	4.5625	in	A =	20.1641	in <sup>2</sup>
C <sub>left</sub> =	4.5625	in	r <sub>y</sub> =	2.1152	in	C <sub>left</sub> =	4.5625	in	r <sub>y</sub> =	2.1152	in

Non-composite Capacities*		
	AB	AI
<b>M</b>	389.53 k-ft	389.53 k-ft
<b>V</b>	111.09 k	111.09 k

\*Compact Section

F <sub>y</sub> =	<b>36.00 ksi</b>
------------------	------------------

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear





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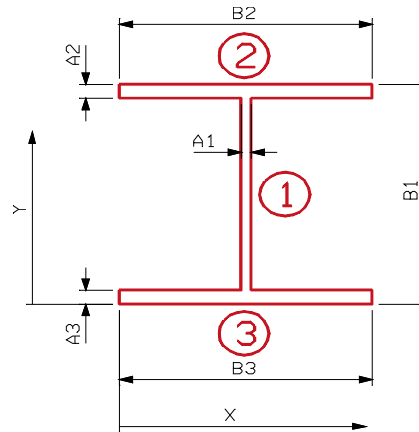
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 32.5000$  in
- $A_2 = t_f = 1.0000$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 1.0000$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



Fascia Stringer F1-7 Avg

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		11.4375	16.2500	185.8594	886.6445	0.0000	0.0000	886.6445
2	Top Flange		8.0000	32.0000	256.0000	0.6667	15.7500	1984.5000	1985.1667
3	Bottom Flange		8.0000	0.5000	4.0000	0.6667	15.7500	1984.5000	1985.1667
<b>Total</b>			<b>27.44</b>		<b>445.86</b>	<b>887.98</b>		<b>3969.00</b>	<b>4856.98</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	16.2500	in	$S_{top} = 298.89$ in <sup>3</sup>	y-bar =	16.2500	in	$S_{top} = 298.89$ in <sup>3</sup>
$I_x =$	4856.98	n <sup>4</sup>	$S_{bottom} = 298.89$ in <sup>3</sup>	$I_x =$	4856.98	n <sup>4</sup>	$S_{bottom} = 298.89$ in <sup>3</sup>
$C_{top} =$	16.2500	in	A = 27.4375 in <sup>2</sup>	$C_{top} =$	16.2500	in	A = 27.4375 in <sup>2</sup>
$C_{bottom} =$	16.2500	in	$r_x = 13.3049$ in	$C_{bottom} =$	16.2500	in	$r_x = 13.3049$ in
J =	5.8695	in <sup>4</sup>	Z = 339.21 in <sup>3</sup>				Z = <b>339.21</b> in <sup>3</sup>



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Date 3/16/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	11.4375	4.0000	45.7500	0.1340	0.0000	0.0000	0.1340
2	Top Flange	8.0000	4.0000	32.0000	42.6667	0.0000	0.0000	42.6667
3	Bottom Flange	8.0000	4.0000	32.0000	42.6667	0.0000	0.0000	42.6667
<b>Total</b>		<b>27.44</b>		<b>109.75</b>	<b>85.47</b>		<b>0.00</b>	<b>85.47</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 21.37 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 21.37 in <sup>3</sup>
I <sub>y</sub> =	85.47	in <sup>4</sup>	S <sub>left</sub> = 21.37 in <sup>3</sup>	I <sub>y</sub> =	85.47	in <sup>4</sup>	S <sub>left</sub> = 21.37 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 27.4375 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 27.4375 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.7649 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.7649 in

Non-composite Capacities*		
	AB	AI
M	1017.63 k-ft	1017.63 k-ft
V	207.62 k	207.62 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x73	<b>Bottom Angles:</b>	
$A_1 = b_f =$	8.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7400 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	7.0000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.4550 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	7.5625 in
$B_3 = t =$	0.4550 in	$Gap =$	0.5625 in

\*select from dropdown list

Coped Stringer S1-7 @ FB C1

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.1420	7.1925	44.1763	0.2803	3.2137	63.4349	63.7152
	Web	2.8483	3.6925	10.5173	9.3015	0.2863	0.2334	9.5349
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	3.7288	48.6631	48.7360
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	0.9788	5.7480	23.7480
3	Additional Plate	0.0000	0.5625	0.0000	0.0000	3.4163	0.0000	0.0000
<b>Total</b>		<b>18.49</b>		<b>73.57</b>	<b>27.65</b>		<b>118.08</b>	<b>145.73</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	3.9788 in	S <sub>top</sub> =	40.67 in <sup>3</sup>	y-bar =	3.9788 in	S <sub>top</sub> =	40.67 in <sup>3</sup>
I <sub>x</sub> =	145.73 in <sup>4</sup>	S <sub>bottom</sub> =	36.63 in <sup>3</sup>	I <sub>x</sub> =	145.73 in <sup>4</sup>	S <sub>bottom</sub> =	36.63 in <sup>3</sup>
C <sub>top</sub> =	3.5837 in	A =	18.4903 in <sup>2</sup>	C <sub>top</sub> =	3.5837 in	A =	18.4903 in <sup>2</sup>
C <sub>bottom</sub> =	3.9788 in	r <sub>x</sub> =	2.8074 in	C <sub>bottom</sub> =	3.9788 in	r <sub>x</sub> =	2.8074 in
J =	2.1093 in <sup>4</sup>	Z =	47.21 in <sup>3</sup>			Z =	47.21 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.1420	4.2275	25.9653	35.2602	0.0000	0.0000	35.2602
	Web		2.8483	4.2275	12.0412	0.0491	0.0000	0.0000	0.0491
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.4775	10.7415	12.5280
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.4775	0.6840	0.7465
2 (Right)	Horizontal Leg		1.7500	6.7050	11.7338	1.7865	2.4775	10.7415	12.5280
	Vertical Leg		3.0000	4.7050	14.1150	0.0625	0.4775	0.6840	0.7465
3	Additional Plate		0.0000	4.2275	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>18.49</b>		<b>78.17</b>	<b>39.01</b>		<b>22.85</b>	<b>61.86</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.2275 in	S <sub>right</sub> =	14.63 in <sup>3</sup>	x-bar =	4.2275 in	S <sub>right</sub> =	14.63 in <sup>3</sup>
I <sub>y</sub> =	61.86 in <sup>4</sup>	S <sub>left</sub> =	14.63 in <sup>3</sup>	I <sub>y</sub> =	61.86 in <sup>4</sup>	S <sub>left</sub> =	14.63 in <sup>3</sup>
C <sub>right</sub> =	4.2275 in	A =	18.4903 in <sup>2</sup>	C <sub>right</sub> =	4.2275 in	A =	18.4903 in <sup>2</sup>
C <sub>left</sub> =	4.2275 in	r <sub>y</sub> =	1.8291 in	C <sub>left</sub> =	4.2275 in	r <sub>y</sub> =	1.8291 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	141.63 k-ft	141.63 k-ft
V	174.31 k	174.31 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x73	<b>Bottom Angles:</b>	
$A_1 = b_f =$	8.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7400 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	10.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.4550 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	11.0000 in
$B_3 = t =$	0.4550 in	$Gap =$	0.5000 in

\*select from dropdown list

**Coped Stringer S1-7 @ FB C2**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.1420	10.6300	65.2895	0.2803	5.2495	169.2552	169.5354
	Web	4.4408	5.3800	23.8915	35.2517	0.0005	0.0000	35.2517
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.1305	92.1279	92.2008
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	2.3805	34.0013	52.0013
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	4.8805	0.0000	0.0000
<b>Total</b>		<b>20.08</b>		<b>108.06</b>	<b>53.60</b>		<b>295.38</b>	<b>348.99</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	5.3805 in	S <sub>top</sub> =	62.10 in <sup>3</sup>	y-bar =	5.3805 in	S <sub>top</sub> =	62.10 in <sup>3</sup>
I <sub>x</sub> =	348.99 in <sup>4</sup>	S <sub>bottom</sub> =	64.86 in <sup>3</sup>	I <sub>x</sub> =	348.99 in <sup>4</sup>	S <sub>bottom</sub> =	64.86 in <sup>3</sup>
C <sub>top</sub> =	5.6195 in	A =	20.0828 in <sup>2</sup>	C <sub>top</sub> =	5.6195 in	A =	20.0828 in <sup>2</sup>
C <sub>bottom</sub> =	5.3805 in	r <sub>x</sub> =	4.1686 in	C <sub>bottom</sub> =	5.3805 in	r <sub>x</sub> =	4.1686 in
J =	2.2192 in <sup>4</sup>	Z =	74.93 in <sup>3</sup>			Z =	74.93 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.1420	4.2275	25.9653	35.2602	0.0000	0.0000	35.2602
	Web		4.4408	4.2275	18.7735	0.0766	0.0000	0.0000	0.0766
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.4775	10.7415	12.5280
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.4775	0.6840	0.7465
2 (Right)	Horizontal Leg		1.7500	6.7050	11.7338	1.7865	2.4775	10.7415	12.5280
	Vertical Leg		3.0000	4.7050	14.1150	0.0625	0.4775	0.6840	0.7465
3	Additional Plate		0.0000	4.2275	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>20.08</b>		<b>84.90</b>	<b>39.03</b>		<b>22.85</b>	<b>61.89</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.2275 in	S <sub>right</sub> =	14.64 in <sup>3</sup>	x-bar =	4.2275 in	S <sub>right</sub> =	14.64 in <sup>3</sup>
I <sub>y</sub> =	61.89 in <sup>4</sup>	S <sub>left</sub> =	14.64 in <sup>3</sup>	I <sub>y</sub> =	61.89 in <sup>4</sup>	S <sub>left</sub> =	14.64 in <sup>3</sup>
C <sub>right</sub> =	4.2275 in	A =	20.0828 in <sup>2</sup>	C <sub>right</sub> =	4.2275 in	A =	20.0828 in <sup>2</sup>
C <sub>left</sub> =	4.2275 in	r <sub>y</sub> =	1.7554 in	C <sub>left</sub> =	4.2275 in	r <sub>y</sub> =	1.7554 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	224.79 k-ft	224.79 k-ft
V	207.56 k	207.56 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x73	<b>Bottom Angles:</b>	
$A_1 = b_f =$	8.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7400 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	7.8750 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.4550 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	8.3750 in
$B_3 = t =$	0.4550 in	$GAP =$	0.5000 in

\*select from dropdown list

Coped Stringer S2-7 @ FB C1

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.1420	8.0050	49.1667	0.2803	3.7036	84.2480	84.5283
	Web	3.2464	4.0675	13.2048	13.7725	0.2339	0.1776	13.9501
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	4.0514	57.4483	57.5212
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	1.3014	10.1617	28.1617
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	3.8014	0.0000	0.0000
<b>Total</b>		<b>18.89</b>		<b>81.25</b>	<b>32.13</b>		<b>152.04</b>	<b>184.16</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	4.3014	in	S <sub>top</sub> =	45.21	in <sup>3</sup>	y-bar =	4.3014	in	S <sub>top</sub> =	45.21	in <sup>3</sup>
I <sub>x</sub> =	184.16	in <sup>4</sup>	S <sub>bottom</sub> =	42.81	in <sup>3</sup>	I <sub>x</sub> =	184.16	in <sup>4</sup>	S <sub>bottom</sub> =	42.81	in <sup>3</sup>
C <sub>top</sub> =	4.0736	in	A =	18.8884	in <sup>2</sup>	C <sub>top</sub> =	4.0736	in	A =	18.8884	in <sup>2</sup>
C <sub>bottom</sub> =	4.3014	in	r <sub>x</sub> =	3.1225	in	C <sub>bottom</sub> =	4.3014	in	r <sub>x</sub> =	3.1225	in
J =	2.1368	in <sup>4</sup>	Z =	53.43	in <sup>3</sup>	Z =	53.43	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.1420	4.2275	25.9653	35.2602	0.0000	0.0000	35.2602
	Web		3.2464	4.2275	13.7243	0.0560	0.0000	0.0000	0.0560
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.4775	10.7415	12.5280
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.4775	0.6840	0.7465
2 (Right)	Horizontal Leg		1.7500	6.7050	11.7338	1.7865	2.4775	10.7415	12.5280
	Vertical Leg		3.0000	4.7050	14.1150	0.0625	0.4775	0.6840	0.7465
3	Additional Plate		0.0000	4.2275	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>18.89</b>		<b>79.85</b>	<b>39.01</b>		<b>22.85</b>	<b>61.87</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	4.2275	in	S <sub>right</sub> =	14.63	in <sup>3</sup>	x-bar =	4.2275	in	S <sub>right</sub> =	14.63	in <sup>3</sup>
I <sub>y</sub> =	61.87	in <sup>4</sup>	S <sub>left</sub> =	14.63	in <sup>3</sup>	I <sub>y</sub> =	61.87	in <sup>4</sup>	S <sub>left</sub> =	14.63	in <sup>3</sup>
C <sub>right</sub> =	4.2275	in	A =	18.8884	in <sup>2</sup>	C <sub>right</sub> =	4.2275	in	A =	18.8884	in <sup>2</sup>
C <sub>left</sub> =	4.2275	in	r <sub>y</sub> =	1.8098	in	C <sub>left</sub> =	4.2275	in	r <sub>y</sub> =	1.8098	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	160.29 k-ft	160.29 k-ft
V	182.63 k	182.63 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section





Made By CTG  
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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x73	<b>Bottom Angles:</b>	
$A_1 = b_f =$	8.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7400 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	11.7500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.4550 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	12.2500 in
$B_3 = t =$	0.4550 in	$Gap =$	0.5000 in

\*select from dropdown list

Coped Stringer S2-7 @ FB C2

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.1420	11.8800	72.9670	0.2803	5.9761	219.3553	219.6356
	Web	5.0096	6.0050	30.0823	50.6048	0.1011	0.0512	50.6561
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.6539	111.8823	111.9552
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	2.9039	50.5952	68.5952
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.4039	0.0000	0.0000
<b>Total</b>		<b>20.65</b>		<b>121.92</b>	<b>68.96</b>		<b>381.88</b>	<b>450.84</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	5.9039 in	S <sub>top</sub> =	71.04 in <sup>3</sup>	y-bar =	5.9039 in	S <sub>top</sub> =	71.04 in <sup>3</sup>
I <sub>x</sub> =	450.84 in <sup>4</sup>	S <sub>bottom</sub> =	76.36 in <sup>3</sup>	I <sub>x</sub> =	450.84 in <sup>4</sup>	S <sub>bottom</sub> =	76.36 in <sup>3</sup>
C <sub>top</sub> =	6.3461 in	A =	20.6516 in <sup>2</sup>	C <sub>top</sub> =	6.3461 in	A =	20.6516 in <sup>2</sup>
C <sub>bottom</sub> =	5.9039 in	r <sub>x</sub> =	4.6724 in	C <sub>bottom</sub> =	5.9039 in	r <sub>x</sub> =	4.6724 in
J =	2.2585 in <sup>4</sup>	Z =	86.10 in <sup>3</sup>	Z =	86.10 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.1420	4.2275	25.9653	35.2602	0.0000	0.0000	35.2602
	Web		5.0096	4.2275	21.1779	0.0864	0.0000	0.0000	0.0864
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.4775	10.7415	12.5280
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.4775	0.6840	0.7465
2 (Right)	Horizontal Leg		1.7500	6.7050	11.7338	1.7865	2.4775	10.7415	12.5280
	Vertical Leg		3.0000	4.7050	14.1150	0.0625	0.4775	0.6840	0.7465
3	Additional Plate		0.0000	4.2275	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>20.65</b>		<b>87.30</b>	<b>39.04</b>		<b>22.85</b>	<b>61.90</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.2275 in	S <sub>right</sub> =	14.64 in <sup>3</sup>	x-bar =	4.2275 in	S <sub>right</sub> =	14.64 in <sup>3</sup>
I <sub>y</sub> =	61.90 in <sup>4</sup>	S <sub>left</sub> =	14.64 in <sup>3</sup>	I <sub>y</sub> =	61.90 in <sup>4</sup>	S <sub>left</sub> =	14.64 in <sup>3</sup>
C <sub>right</sub> =	4.2275 in	A =	20.6516 in <sup>2</sup>	C <sub>right</sub> =	4.2275 in	A =	20.6516 in <sup>2</sup>
C <sub>left</sub> =	4.2275 in	r <sub>y</sub> =	1.7312 in	C <sub>left</sub> =	4.2275 in	r <sub>y</sub> =	1.7312 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	258.30 k-ft	258.30 k-ft
V	219.44 k	219.44 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x73	<b>Bottom Angles:</b>	
$A_1 = b_f =$	8.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7400 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	9.8750 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.4550 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	10.3750 in
$B_3 = t =$	0.4550 in	$Gap =$	0.5000 in

\*select from dropdown list

**Coped Stringer S3-7 @ FB C1**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.1420	10.0050	61.4507	0.2803	4.8840	146.5059	146.7862
	Web	4.1564	5.0675	21.0627	28.9039	0.0535	0.0119	28.9158
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	4.8710	83.0444	83.1173
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	2.1210	26.9927	44.9927
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	4.6210	0.0000	0.0000
<b>Total</b>		<b>19.80</b>		<b>101.39</b>	<b>47.26</b>		<b>256.55</b>	<b>303.81</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties					As-Inspected Section Properties						
y-bar =	5.1210	in	S <sub>top</sub> =	57.83	in <sup>3</sup>	y-bar =	5.1210	in	S <sub>top</sub> =	57.83	in <sup>3</sup>
I <sub>x</sub> =	303.81	in <sup>4</sup>	S <sub>bott.</sub> =	59.33	in <sup>3</sup>	I <sub>x</sub> =	303.81	in <sup>4</sup>	S <sub>bott.</sub> =	59.33	in <sup>3</sup>
C <sub>top</sub> =	5.2540	in	A =	19.7984	in <sup>2</sup>	C <sub>top</sub> =	5.2540	in	A =	19.7984	in <sup>2</sup>
C <sub>bottom</sub> =	5.1210	in	r <sub>x</sub> =	3.9173	in	C <sub>bottom</sub> =	5.1210	in	r <sub>x</sub> =	3.9173	in
J =	2.1996	in <sup>4</sup>	Z =	69.57	in <sup>3</sup>	Z =	69.57	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.1420	4.2275	25.9653	35.2602	0.0000	0.0000	35.2602
	Web		4.1564	4.2275	17.5713	0.0717	0.0000	0.0000	0.0717
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.4775	10.7415	12.5280
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.4775	0.6840	0.7465
2 (Right)	Horizontal Leg		1.7500	6.7050	11.7338	1.7865	2.4775	10.7415	12.5280
	Vertical Leg		3.0000	4.7050	14.1150	0.0625	0.4775	0.6840	0.7465
3	Additional Plate		0.0000	4.2275	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>19.80</b>		<b>83.70</b>	<b>39.03</b>		<b>22.85</b>	<b>61.88</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	4.2275	in	S <sub>right</sub> =	14.64	in <sup>3</sup>	x-bar =	4.2275	in	S <sub>right</sub> =	14.64	in <sup>3</sup>
I <sub>y</sub> =	61.88	in <sup>4</sup>	S <sub>left</sub> =	14.64	in <sup>3</sup>	I <sub>y</sub> =	61.88	in <sup>4</sup>	S <sub>left</sub> =	14.64	in <sup>3</sup>
C <sub>right</sub> =	4.2275	in	A =	19.7984	in <sup>2</sup>	C <sub>right</sub> =	4.2275	in	A =	19.7984	in <sup>2</sup>
C <sub>left</sub> =	4.2275	in	r <sub>y</sub> =	1.7679	in	C <sub>left</sub> =	4.2275	in	r <sub>y</sub> =	1.7679	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	208.71 k-ft	208.71 k-ft
V	201.63 k	201.63 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x73	<b>Bottom Angles:</b>	
$A_1 = b_f =$	8.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7400 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	13.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.4550 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	14.0000 in
$B_3 = t =$	0.4550 in	$Gap =$	0.5000 in

\*select from dropdown list

Coped Stringer S3-7 @ FB C2

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.1420	13.6300	83.7155	0.2803	6.9844	299.6146	299.8949
	Web	5.8058	6.8800	39.9439	78.7739	0.2344	0.3189	79.0927
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.3956	143.1648	143.2377
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.6456	79.7442	97.7442
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.1456	0.0000	0.0000
<b>Total</b>		<b>21.45</b>		<b>142.53</b>	<b>97.13</b>		<b>522.84</b>	<b>619.97</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.6456 in	S <sub>top</sub> =	84.30 in <sup>3</sup>	y-bar =	6.6456 in	S <sub>top</sub> =	84.30 in <sup>3</sup>
I <sub>x</sub> =	619.97 in <sup>4</sup>	S <sub>bottom</sub> =	93.29 in <sup>3</sup>	I <sub>x</sub> =	619.97 in <sup>4</sup>	S <sub>bottom</sub> =	93.29 in <sup>3</sup>
C <sub>top</sub> =	7.3544 in	A =	21.4478 in <sup>2</sup>	C <sub>top</sub> =	7.3544 in	A =	21.4478 in <sup>2</sup>
C <sub>bottom</sub> =	6.6456 in	r <sub>x</sub> =	5.3764 in	C <sub>bottom</sub> =	6.6456 in	r <sub>x</sub> =	5.3764 in
J =	2.3134 in <sup>4</sup>	Z =	102.74 in <sup>3</sup>	Z =	102.74 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.1420	4.2275	25.9653	35.2602	0.0000	0.0000	35.2602
	Web		5.8058	4.2275	24.5440	0.1002	0.0000	0.0000	0.1002
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.4775	10.7415	12.5280
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.4775	0.6840	0.7465
2 (Right)	Horizontal Leg		1.7500	6.7050	11.7338	1.7865	2.4775	10.7415	12.5280
	Vertical Leg		3.0000	4.7050	14.1150	0.0625	0.4775	0.6840	0.7465
3	Additional Plate		0.0000	4.2275	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>21.45</b>		<b>90.67</b>	<b>39.06</b>		<b>22.85</b>	<b>61.91</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.2275 in	S <sub>right</sub> =	14.64 in <sup>3</sup>	x-bar =	4.2275 in	S <sub>right</sub> =	14.64 in <sup>3</sup>
I <sub>y</sub> =	61.91 in <sup>4</sup>	S <sub>left</sub> =	14.64 in <sup>3</sup>	I <sub>y</sub> =	61.91 in <sup>4</sup>	S <sub>left</sub> =	14.64 in <sup>3</sup>
C <sub>right</sub> =	4.2275 in	A =	21.4478 in <sup>2</sup>	C <sub>right</sub> =	4.2275 in	A =	21.4478 in <sup>2</sup>
C <sub>left</sub> =	4.2275 in	r <sub>y</sub> =	1.6990 in	C <sub>left</sub> =	4.2275 in	r <sub>y</sub> =	1.6990 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	308.22 k-ft	308.22 k-ft
V	236.07 k	236.07 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



Made By CTG  
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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x83	<b>Bottom Angles:</b>	
$A_1 = b_f =$	8.3600 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8350 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	10.7500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5150 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	11.1875 in
$B_3 = t =$	0.5150 in	$Gap =$	0.4375 in

\*select from dropdown list

**Coped Stringer S4-7 @ FB C1**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.9806	10.7700	75.1811	0.4056	5.1367	184.1910	184.5966
	Web	5.1062	5.3950	27.5481	41.8316	0.2383	0.2899	42.1214
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.3833	101.4281	101.5010
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	2.6333	41.6043	59.6043
3	Additional Plate	0.0000	0.4375	0.0000	0.0000	5.1958	0.0000	0.0000
<b>Total</b>		<b>21.59</b>		<b>121.60</b>	<b>60.31</b>		<b>327.51</b>	<b>387.82</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	5.6333 in	S <sub>top</sub> =	69.82 in <sup>3</sup>	y-bar =	5.6333 in	S <sub>top</sub> =	69.82 in <sup>3</sup>
I <sub>x</sub> =	387.82 in <sup>4</sup>	S <sub>bottom</sub> =	68.85 in <sup>3</sup>	I <sub>x</sub> =	387.82 in <sup>4</sup>	S <sub>bottom</sub> =	68.85 in <sup>3</sup>
C <sub>top</sub> =	5.5542 in	A =	21.5868 in <sup>2</sup>	C <sub>top</sub> =	5.5542 in	A =	21.5868 in <sup>2</sup>
C <sub>bottom</sub> =	5.6333 in	r <sub>x</sub> =	4.2386 in	C <sub>bottom</sub> =	5.6333 in	r <sub>x</sub> =	4.2386 in
J =	2.8654 in <sup>4</sup>	Z =	82.64 in <sup>3</sup>			Z =	82.64 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.9806	4.2575	29.7199	40.6559	0.0000	0.0000	40.6559
	Web		5.1062	4.2575	21.7398	0.1129	0.0000	0.0000	0.1129
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.5075	11.0032	12.7897
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.5075	0.7727	0.8352
2 (Right)	Horizontal Leg		1.7500	6.7650	11.8388	1.7865	2.5075	11.0032	12.7897
	Vertical Leg		3.0000	4.7650	14.2950	0.0625	0.5075	0.7727	0.8352
3	Additional Plate		0.0000	4.2575	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>21.59</b>		<b>91.91</b>	<b>44.47</b>		<b>23.55</b>	<b>68.02</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.2575 in	S <sub>right</sub> =	15.98 in <sup>3</sup>	x-bar =	4.2575 in	S <sub>right</sub> =	15.98 in <sup>3</sup>
I <sub>y</sub> =	68.02 in <sup>4</sup>	S <sub>left</sub> =	15.98 in <sup>3</sup>	I <sub>y</sub> =	68.02 in <sup>4</sup>	S <sub>left</sub> =	15.98 in <sup>3</sup>
C <sub>right</sub> =	4.2575 in	A =	21.5868 in <sup>2</sup>	C <sub>right</sub> =	4.2575 in	A =	21.5868 in <sup>2</sup>
C <sub>left</sub> =	4.2575 in	r <sub>y</sub> =	1.7751 in	C <sub>left</sub> =	4.2575 in	r <sub>y</sub> =	1.7751 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	247.92 k-ft	247.92 k-ft
V	221.46 k	221.46 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section





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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x83	<b>Bottom Angles:</b>
$A_1 = b_f =$	8.3600 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.8350 in	$B_2 = L_h =$ 4.0000 in
$C_1 = d =$	14.0000 in	$C_2 = t =$ 0.5000 in
$D_1 = t_w =$	0.5150 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	H = 14.5000 in
$B_3 = t =$	0.5150 in	Gap = 0.5000 in

\*select from dropdown list

**Coped Stringer S4-7 @ FB C2**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.9806	14.0825	98.3043	0.4056	6.9804	340.1385	340.5441
	Web	6.7800	7.0825	48.0192	97.9239	0.0196	0.0026	97.9265
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.8521	164.3285	164.4014
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.1021	100.9624	118.9624
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.6021	0.0000	0.0000
<b>Total</b>		<b>23.26</b>		<b>165.20</b>	<b>116.40</b>		<b>605.43</b>	<b>721.83</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	7.1021 in	S <sub>top</sub> =	97.57 in <sup>3</sup>	y-bar =	7.1021 in	S <sub>top</sub> =	97.57 in <sup>3</sup>
I <sub>x</sub> =	721.83 in <sup>4</sup>	S <sub>bott.</sub> =	101.64 in <sup>3</sup>	I <sub>x</sub> =	721.83 in <sup>4</sup>	S <sub>bott.</sub> =	101.64 in <sup>3</sup>
C <sub>top</sub> =	7.3979 in	A =	23.2606 in <sup>2</sup>	C <sub>top</sub> =	7.3979 in	A =	23.2606 in <sup>2</sup>
C <sub>bottom</sub> =	7.1021 in	r <sub>x</sub> =	5.5707 in	C <sub>bottom</sub> =	7.1021 in	r <sub>x</sub> =	5.5707 in
J =	3.0134 in <sup>4</sup>	Z =	117.14 in <sup>3</sup>			Z =	117.14 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.9806	4.2575	29.7199	40.6559	0.0000	0.0000	40.6559
	Web		6.7800	4.2575	28.8657	0.1499	0.0000	0.0000	0.1499
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.5075	11.0032	12.7897
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.5075	0.7727	0.8352
2 (Right)	Horizontal Leg		1.7500	6.7650	11.8388	1.7865	2.5075	11.0032	12.7897
	Vertical Leg		3.0000	4.7650	14.2950	0.0625	0.5075	0.7727	0.8352
3	Additional Plate		0.0000	4.2575	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>23.26</b>		<b>99.03</b>	<b>44.50</b>		<b>23.55</b>	<b>68.06</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.2575 in	S <sub>right</sub> =	15.98 in <sup>3</sup>	x-bar =	4.2575 in	S <sub>right</sub> =	15.98 in <sup>3</sup>
I <sub>y</sub> =	68.06 in <sup>4</sup>	S <sub>left</sub> =	15.98 in <sup>3</sup>	I <sub>y</sub> =	68.06 in <sup>4</sup>	S <sub>left</sub> =	15.98 in <sup>3</sup>
C <sub>right</sub> =	4.2575 in	A =	23.2606 in <sup>2</sup>	C <sub>right</sub> =	4.2575 in	A =	23.2606 in <sup>2</sup>
C <sub>left</sub> =	4.2575 in	r <sub>y</sub> =	1.7105 in	C <sub>left</sub> =	4.2575 in	r <sub>y</sub> =	1.7105 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	351.42 k-ft	351.42 k-ft
V	256.41 k	256.41 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x83	<b>Bottom Angles:</b>	
$A_1 = b_f =$	8.3600 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8350 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	11.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5150 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	12.0000 in
$B_3 = t =$	0.5150 in	$Gap =$	0.5000 in

\*select from dropdown list

**Coped Stringer S5-7 @ FB C1**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.9806	11.5825	80.8528	0.4056	5.5859	217.8145	218.2201
	Web	5.4925	5.8325	32.0349	52.0605	0.1641	0.1478	52.2083
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.7466	115.5800	115.6529
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	2.9966	53.8759	71.8759
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.4966	0.0000	0.0000
<b>Total</b>		<b>21.97</b>		<b>131.76</b>	<b>70.54</b>		<b>387.42</b>	<b>457.96</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	5.9966 in	S <sub>top</sub> =	76.28 in <sup>3</sup>	y-bar =	5.9966 in	S <sub>top</sub> =	76.28 in <sup>3</sup>
I <sub>x</sub> =	457.96 in <sup>4</sup>	S <sub>bott.</sub> =	76.37 in <sup>3</sup>	I <sub>x</sub> =	457.96 in <sup>4</sup>	S <sub>bott.</sub> =	76.37 in <sup>3</sup>
C <sub>top</sub> =	6.0034 in	A =	21.9731 in <sup>2</sup>	C <sub>top</sub> =	6.0034 in	A =	21.9731 in <sup>2</sup>
C <sub>bottom</sub> =	5.9966 in	r <sub>x</sub> =	4.5653 in	C <sub>bottom</sub> =	5.9966 in	r <sub>x</sub> =	4.5653 in
J =	2.8996 in <sup>4</sup>	Z =	90.56 in <sup>3</sup>			Z =	90.56 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.9806	4.2575	29.7199	40.6559	0.0000	0.0000	40.6559
	Web		5.4925	4.2575	23.3842	0.1214	0.0000	0.0000	0.1214
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.5075	11.0032	12.7897
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.5075	0.7727	0.8352
2 (Right)	Horizontal Leg		1.7500	6.7650	11.8388	1.7865	2.5075	11.0032	12.7897
	Vertical Leg		3.0000	4.7650	14.2950	0.0625	0.5075	0.7727	0.8352
3	Additional Plate		0.0000	4.2575	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>21.97</b>		<b>93.55</b>	<b>44.48</b>		<b>23.55</b>	<b>68.03</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.2575 in	S <sub>right</sub> =	15.98 in <sup>3</sup>	x-bar =	4.2575 in	S <sub>right</sub> =	15.98 in <sup>3</sup>
I <sub>y</sub> =	68.03 in <sup>4</sup>	S <sub>left</sub> =	15.98 in <sup>3</sup>	I <sub>y</sub> =	68.03 in <sup>4</sup>	S <sub>left</sub> =	15.98 in <sup>3</sup>
C <sub>right</sub> =	4.2575 in	A =	21.9731 in <sup>2</sup>	C <sub>right</sub> =	4.2575 in	A =	21.9731 in <sup>2</sup>
C <sub>left</sub> =	4.2575 in	r <sub>y</sub> =	1.7595 in	C <sub>left</sub> =	4.2575 in	r <sub>y</sub> =	1.7595 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	271.68 k-ft	271.68 k-ft
V	229.52 k	229.52 k

F<sub>y</sub> = 36.00 ksi

\*Compact Section



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x83	<b>Bottom Angles:</b>	
$A_1 = b_f =$	8.3600 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8350 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	15.0000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5150 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	15.5000 in
$B_3 = t =$	0.5150 in	$Gap =$	0.5000 in

\*select from dropdown list

Coped Stringer S5-7 @ FB C2

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.9806	15.0825	105.2849	0.4056	7.5338	396.2087	396.6143
	Web	7.2950	7.5825	55.3141	121.9764	0.0338	0.0083	121.9847
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	7.2987	186.4472	186.5201
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.5487	124.1426	142.1426
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	7.0487	0.0000	0.0000
<b>Total</b>		<b>23.78</b>		<b>179.47</b>	<b>140.45</b>		<b>706.81</b>	<b>847.26</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	7.5487	in	S <sub>top</sub> =	106.56	in <sup>3</sup>	y-bar =	7.5487	in	S <sub>top</sub> =	106.56	in <sup>3</sup>
I <sub>x</sub> =	847.26	in <sup>4</sup>	S <sub>bottom</sub> =	112.24	in <sup>3</sup>	I <sub>x</sub> =	847.26	in <sup>4</sup>	S <sub>bottom</sub> =	112.24	in <sup>3</sup>
C <sub>top</sub> =	7.9513	in	A =	23.7756	in <sup>2</sup>	C <sub>top</sub> =	7.9513	in	A =	23.7756	in <sup>2</sup>
C <sub>bottom</sub> =	7.5487	in	r <sub>x</sub> =	5.9696	in	C <sub>bottom</sub> =	7.5487	in	r <sub>x</sub> =	5.9696	in
J =	3.0590	in <sup>4</sup>	Z =	128.52	in <sup>3</sup>	Z =	128.52	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.9806	4.2575	29.7199	40.6559	0.0000	0.0000	40.6559
	Web		7.2950	4.2575	31.0584	0.1612	0.0000	0.0000	0.1612
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.5075	11.0032	12.7897
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.5075	0.7727	0.8352
2 (Right)	Horizontal Leg		1.7500	6.7650	11.8388	1.7865	2.5075	11.0032	12.7897
	Vertical Leg		3.0000	4.7650	14.2950	0.0625	0.5075	0.7727	0.8352
3	Additional Plate		0.0000	4.2575	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>23.78</b>		<b>101.22</b>	<b>44.52</b>		<b>23.55</b>	<b>68.07</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	4.2575	in	S <sub>right</sub> =	15.99	in <sup>3</sup>	x-bar =	4.2575	in	S <sub>right</sub> =	15.99	in <sup>3</sup>
I <sub>y</sub> =	68.07	in <sup>4</sup>	S <sub>left</sub> =	15.99	in <sup>3</sup>	I <sub>y</sub> =	68.07	in <sup>4</sup>	S <sub>left</sub> =	15.99	in <sup>3</sup>
C <sub>right</sub> =	4.2575	in	A =	23.7756	in <sup>2</sup>	C <sub>right</sub> =	4.2575	in	A =	23.7756	in <sup>2</sup>
C <sub>left</sub> =	4.2575	in	r <sub>y</sub> =	1.6920	in	C <sub>left</sub> =	4.2575	in	r <sub>y</sub> =	1.6920	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	385.56 k-ft	385.56 k-ft
V	267.16 k	267.16 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x83	<b>Bottom Angles:</b>	
$A_1 = b_f =$	8.3600 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8350 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	11.2500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5150 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	11.7500 in
$B_3 = t =$	0.5150 in	$GAP =$	0.5000 in

\*select from dropdown list

**Coped Stringer S6-7 @ FB C1**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.9806	11.3325	79.1076	0.4056	5.4456	207.0040	207.4096
	Web	5.3637	5.7075	30.6135	48.4846	0.1794	0.1727	48.6573
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.6369	111.2126	111.2855
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	2.8869	50.0063	68.0063
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.3869	0.0000	0.0000
<b>Total</b>		<b>21.84</b>		<b>128.60</b>	<b>66.96</b>		<b>368.40</b>	<b>435.36</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	5.8869 in	S <sub>top</sub> =	74.25 in <sup>3</sup>	y-bar =	5.8869 in	S <sub>top</sub> =	74.25 in <sup>3</sup>
I <sub>x</sub> =	435.36 in <sup>4</sup>	S <sub>bottom</sub> =	73.95 in <sup>3</sup>	I <sub>x</sub> =	435.36 in <sup>4</sup>	S <sub>bottom</sub> =	73.95 in <sup>3</sup>
C <sub>top</sub> =	5.8631 in	A =	21.8443 in <sup>2</sup>	C <sub>top</sub> =	5.8631 in	A =	21.8443 in <sup>2</sup>
C <sub>bottom</sub> =	5.8869 in	r <sub>x</sub> =	4.4643 in	C <sub>bottom</sub> =	5.8869 in	r <sub>x</sub> =	4.4643 in
J =	2.8882 in <sup>4</sup>	Z =	88.05 in <sup>3</sup>			Z =	88.05 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.9806	4.2575	29.7199	40.6559	0.0000	0.0000	40.6559
	Web		5.3637	4.2575	22.8361	0.1185	0.0000	0.0000	0.1185
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.5075	11.0032	12.7897
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.5075	0.7727	0.8352
2 (Right)	Horizontal Leg		1.7500	6.7650	11.8388	1.7865	2.5075	11.0032	12.7897
	Vertical Leg		3.0000	4.7650	14.2950	0.0625	0.5075	0.7727	0.8352
3	Additional Plate		0.0000	4.2575	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>21.84</b>		<b>93.00</b>	<b>44.47</b>		<b>23.55</b>	<b>68.02</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.2575 in	S <sub>right</sub> =	15.98 in <sup>3</sup>	x-bar =	4.2575 in	S <sub>right</sub> =	15.98 in <sup>3</sup>
I <sub>y</sub> =	68.02 in <sup>4</sup>	S <sub>left</sub> =	15.98 in <sup>3</sup>	I <sub>y</sub> =	68.02 in <sup>4</sup>	S <sub>left</sub> =	15.98 in <sup>3</sup>
C <sub>right</sub> =	4.2575 in	A =	21.8443 in <sup>2</sup>	C <sub>right</sub> =	4.2575 in	A =	21.8443 in <sup>2</sup>
C <sub>left</sub> =	4.2575 in	r <sub>y</sub> =	1.7647 in	C <sub>left</sub> =	4.2575 in	r <sub>y</sub> =	1.7647 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	264.15 k-ft	264.15 k-ft
V	226.83 k	226.83 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section





Made By CTG  
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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x83	<b>Bottom Angles:</b>	
$A_1 = b_f =$	8.3600 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8350 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	14.2500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5150 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	14.7500 in
$B_3 = t =$	0.5150 in	$Gap =$	0.5000 in

\*select from dropdown list

**Coped Stringer S6-7 @ FB C2**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.9806	14.3325	100.0494	0.4056	7.1190	353.7771	354.1827
	Web		6.9087	7.2075	49.7946	103.6091	0.0060	0.0002	103.6094
2	Horizontal Legs		3.5000	0.2500	0.8750	0.0729	6.9635	169.7166	169.7895
	Vertical Legs		6.0000	3.0000	18.0000	18.0000	4.2135	106.5219	124.5219
3	Additional Plate		0.0000	0.5000	0.0000	0.0000	6.7135	0.0000	0.0000
<b>Total</b>			<b>23.39</b>		<b>168.72</b>	<b>122.09</b>		<b>630.02</b>	<b>752.10</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	7.2135 in	S <sub>top</sub> =	99.79 in <sup>3</sup>	y-bar =	7.2135 in	S <sub>top</sub> =	99.79 in <sup>3</sup>
I <sub>x</sub> =	752.10 in <sup>4</sup>	S <sub>bottom</sub> =	104.26 in <sup>3</sup>	I <sub>x</sub> =	752.10 in <sup>4</sup>	S <sub>bottom</sub> =	104.26 in <sup>3</sup>
C <sub>top</sub> =	7.5365 in	A =	23.3893 in <sup>2</sup>	C <sub>top</sub> =	7.5365 in	A =	23.3893 in <sup>2</sup>
C <sub>bottom</sub> =	7.2135 in	r <sub>x</sub> =	5.6706 in	C <sub>bottom</sub> =	7.2135 in	r <sub>x</sub> =	5.6706 in
J =	3.0248 in <sup>4</sup>	Z =	119.94 in <sup>3</sup>			Z =	119.94 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.9806	4.2575	29.7199	40.6559	0.0000	0.0000	40.6559
	Web		6.9087	4.2575	29.4139	0.1527	0.0000	0.0000	0.1527
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.5075	11.0032	12.7897
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.5075	0.7727	0.8352
2 (Right)	Horizontal Leg		1.7500	6.7650	11.8388	1.7865	2.5075	11.0032	12.7897
	Vertical Leg		3.0000	4.7650	14.2950	0.0625	0.5075	0.7727	0.8352
3	Additional Plate		0.0000	4.2575	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>23.39</b>		<b>99.58</b>	<b>44.51</b>		<b>23.55</b>	<b>68.06</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.2575 in	S <sub>right</sub> =	15.99 in <sup>3</sup>	x-bar =	4.2575 in	S <sub>right</sub> =	15.99 in <sup>3</sup>
I <sub>y</sub> =	68.06 in <sup>4</sup>	S <sub>left</sub> =	15.99 in <sup>3</sup>	I <sub>y</sub> =	68.06 in <sup>4</sup>	S <sub>left</sub> =	15.99 in <sup>3</sup>
C <sub>right</sub> =	4.2575 in	A =	23.3893 in <sup>2</sup>	C <sub>right</sub> =	4.2575 in	A =	23.3893 in <sup>2</sup>
C <sub>left</sub> =	4.2575 in	r <sub>y</sub> =	1.7058 in	C <sub>left</sub> =	4.2575 in	r <sub>y</sub> =	1.7058 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	359.82 k-ft	359.82 k-ft
V	259.09 k	259.09 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



Made By CTG  
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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x83	<b>Bottom Angles:</b>	
$A_1 = b_f =$	8.3600 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8350 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	12.7500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5150 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	13.2500 in
$B_3 = t =$	0.5150 in	$GAP =$	0.5000 in

\*select from dropdown list

Coped Stringer S7-7 @ FB C1

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.9806	12.8325	89.5785	0.4056	6.2852	275.7634	276.1689
	Web	6.1362	6.4575	39.6247	72.5952	0.0898	0.0494	72.6447
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.2973	138.7942	138.8671
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.5473	75.4983	93.4983
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.0473	0.0000	0.0000
<b>Total</b>		<b>22.62</b>		<b>148.08</b>	<b>91.07</b>		<b>490.11</b>	<b>581.18</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.5473 in	S <sub>top</sub> =	86.71 in <sup>3</sup>	y-bar =	6.5473 in	S <sub>top</sub> =	86.71 in <sup>3</sup>
I <sub>x</sub> =	581.18 in <sup>4</sup>	S <sub>bottom</sub> =	88.77 in <sup>3</sup>	I <sub>x</sub> =	581.18 in <sup>4</sup>	S <sub>bottom</sub> =	88.77 in <sup>3</sup>
C <sub>top</sub> =	6.7027 in	A =	22.6168 in <sup>2</sup>	C <sub>top</sub> =	6.7027 in	A =	22.6168 in <sup>2</sup>
C <sub>bottom</sub> =	6.5473 in	r <sub>x</sub> =	5.0692 in	C <sub>bottom</sub> =	6.5473 in	r <sub>x</sub> =	5.0692 in
J =	2.9565 in <sup>4</sup>	Z =	103.51 in <sup>3</sup>			Z =	103.51 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.9806	4.2575	29.7199	40.6559	0.0000	0.0000	40.6559
	Web		6.1362	4.2575	26.1250	0.1356	0.0000	0.0000	0.1356
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.5075	11.0032	12.7897
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.5075	0.7727	0.8352
2 (Right)	Horizontal Leg		1.7500	6.7650	11.8388	1.7865	2.5075	11.0032	12.7897
	Vertical Leg		3.0000	4.7650	14.2950	0.0625	0.5075	0.7727	0.8352
3	Additional Plate		0.0000	4.2575	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>22.62</b>		<b>96.29</b>	<b>44.49</b>		<b>23.55</b>	<b>68.04</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.2575 in	S <sub>right</sub> =	15.98 in <sup>3</sup>	x-bar =	4.2575 in	S <sub>right</sub> =	15.98 in <sup>3</sup>
I <sub>y</sub> =	68.04 in <sup>4</sup>	S <sub>left</sub> =	15.98 in <sup>3</sup>	I <sub>y</sub> =	68.04 in <sup>4</sup>	S <sub>left</sub> =	15.98 in <sup>3</sup>
C <sub>right</sub> =	4.2575 in	A =	22.6168 in <sup>2</sup>	C <sub>right</sub> =	4.2575 in	A =	22.6168 in <sup>2</sup>
C <sub>left</sub> =	4.2575 in	r <sub>y</sub> =	1.7345 in	C <sub>left</sub> =	4.2575 in	r <sub>y</sub> =	1.7345 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	310.53 k-ft	310.53 k-ft
V	242.96 k	242.96 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



Made By CTG  
Checked By DMP

Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x83	<b>Bottom Angles:</b>	
$A_1 = b_f =$	8.3600 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8350 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	15.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5150 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	16.0000 in
$B_3 = t =$	0.5150 in	$Gap =$	0.5000 in

\*select from dropdown list

**Coped Stringer S7-7 @ FB C2**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.9806	15.5825	108.7752	0.4056	7.8097	425.7536	426.1592
	Web	7.5525	7.8325	59.1548	135.3543	0.0597	0.0269	135.3812
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	7.5228	198.0753	198.1482
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.7728	136.6793	154.6793
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	7.2728	0.0000	0.0000
<b>Total</b>		<b>24.03</b>		<b>186.80</b>	<b>153.83</b>		<b>760.54</b>	<b>914.37</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	7.7728 in	S <sub>top</sub> =	111.14 in <sup>3</sup>	y-bar =	7.7728 in	S <sub>top</sub> =	111.14 in <sup>3</sup>
I <sub>x</sub> =	914.37 in <sup>4</sup>	S <sub>bott.</sub> =	117.64 in <sup>3</sup>	I <sub>x</sub> =	914.37 in <sup>4</sup>	S <sub>bott.</sub> =	117.64 in <sup>3</sup>
C <sub>top</sub> =	8.2272 in	A =	24.0331 in <sup>2</sup>	C <sub>top</sub> =	8.2272 in	A =	24.0331 in <sup>2</sup>
C <sub>bottom</sub> =	7.7728 in	r <sub>x</sub> =	6.1682 in	C <sub>bottom</sub> =	7.7728 in	r <sub>x</sub> =	6.1682 in
J =	3.0817 in <sup>4</sup>	Z =	134.37 in <sup>3</sup>			Z =	134.37 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.9806	4.2575	29.7199	40.6559	0.0000	0.0000	40.6559
	Web		7.5525	4.2575	32.1547	0.1669	0.0000	0.0000	0.1669
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.5075	11.0032	12.7897
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.5075	0.7727	0.8352
2 (Right)	Horizontal Leg		1.7500	6.7650	11.8388	1.7865	2.5075	11.0032	12.7897
	Vertical Leg		3.0000	4.7650	14.2950	0.0625	0.5075	0.7727	0.8352
3	Additional Plate		0.0000	4.2575	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>24.03</b>		<b>102.32</b>	<b>44.52</b>		<b>23.55</b>	<b>68.07</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.2575 in	S <sub>right</sub> =	15.99 in <sup>3</sup>	x-bar =	4.2575 in	S <sub>right</sub> =	15.99 in <sup>3</sup>
I <sub>y</sub> =	68.07 in <sup>4</sup>	S <sub>left</sub> =	15.99 in <sup>3</sup>	I <sub>y</sub> =	68.07 in <sup>4</sup>	S <sub>left</sub> =	15.99 in <sup>3</sup>
C <sub>right</sub> =	4.2575 in	A =	24.0331 in <sup>2</sup>	C <sub>right</sub> =	4.2575 in	A =	24.0331 in <sup>2</sup>
C <sub>left</sub> =	4.2575 in	r <sub>y</sub> =	1.6830 in	C <sub>left</sub> =	4.2575 in	r <sub>y</sub> =	1.6830 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	403.11 k-ft	403.11 k-ft
V	272.54 k	272.54 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



Made By CTG  
Checked By DMP

Date 3/16/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

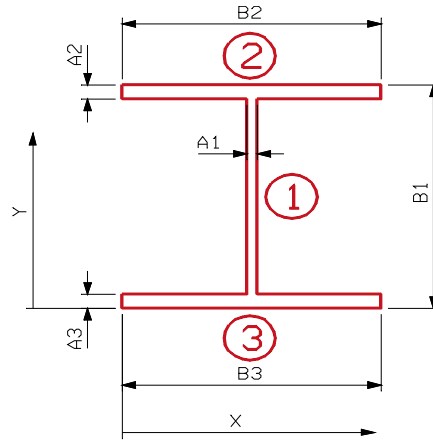
Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 21.5000$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 9.1250$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in

$d_o = N/A$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



Fascia Stringer F2-7 @ FB C1

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		7.5000	10.7500	80.6250	250.0000	0.4303	1.3887	251.3887
2	Top Flange		6.8438	21.1250	144.5742	0.3208	9.9447	676.8268	677.1476
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	10.8053	700.5270	700.8082
<b>Total</b>			<b>20.34</b>		<b>227.45</b>	<b>250.60</b>		<b>1378.74</b>	<b>1629.34</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	11.1803	in	$S_{top} = 157.89$ in <sup>3</sup>	y-bar =	11.1803	in	$S_{top} = 157.89$ in <sup>3</sup>
$I_x =$	1629.34	in <sup>4</sup>	$S_{bott.} = 145.73$ in <sup>3</sup>	$I_x =$	1629.34	in <sup>4</sup>	$S_{bott.} = 145.73$ in <sup>3</sup>
$C_{top} =$	10.3197	in	$A = 20.3438$ in <sup>2</sup>	$C_{top} =$	10.3197	in	$A = 20.3438$ in <sup>2</sup>
$C_{bottom} =$	11.1803	in	$r_x = 8.9493$ in	$C_{bottom} =$	11.1803	in	$r_x = 8.9493$ in
J =	2.7598	in <sup>4</sup>	Z = 170.28 in <sup>3</sup>				Z = <b>170.28</b> in <sup>3</sup>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		7.5000	4.5625	34.2188	0.0879	0.0000	0.0000	0.0879
2	Top Flange		6.8438	4.5625	31.2246	47.4874	0.0000	0.0000	47.4874
3	Bottom Flange		6.0000	4.5625	27.3750	32.0000	0.0000	0.0000	32.0000
<b>Total</b>			<b>20.34</b>		<b>92.82</b>	<b>79.58</b>		<b>0.00</b>	<b>79.58</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	4.5625	in	S <sub>right</sub> =	17.44	in <sup>3</sup>	x-bar =	4.5625	in	S <sub>right</sub> =	17.44	in <sup>3</sup>
I <sub>y</sub> =	79.58	in <sup>4</sup>	S <sub>left</sub> =	17.44	in <sup>3</sup>	I <sub>y</sub> =	79.58	in <sup>4</sup>	S <sub>left</sub> =	17.44	in <sup>3</sup>
C <sub>right</sub> =	4.5625	in	A =	20.3438	in <sup>2</sup>	C <sub>right</sub> =	4.5625	in	A =	20.3438	in <sup>2</sup>
C <sub>left</sub> =	4.5625	in	r <sub>y</sub> =	1.9778	in	C <sub>left</sub> =	4.5625	in	r <sub>y</sub> =	1.9778	in

Non-composite Capacities*		
	AB	AI
M	510.84 k-ft	510.84 k-ft
V	156.60 k	156.60 k

\*Compact Section

F <sub>y</sub> =	36.00 ksi
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AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear





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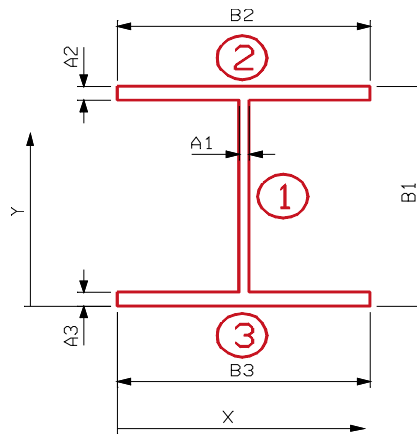
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 41.5625$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



Fascia Stringer F2-7 Avg

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		15.0234	20.7813	312.2058	2009.3897	0.0000	0.0000	2009.3897
2	Top Flange		6.0000	41.1875	247.1250	0.2813	20.4063	2498.4902	2498.7715
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	20.4063	2498.4902	2498.7715
<b>Total</b>			<b>27.02</b>		<b>561.58</b>	<b>2009.95</b>		<b>4996.98</b>	<b>7006.93</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	20.7813	in	$S_{top} = 337.18$	in <sup>3</sup>	y-bar =	20.7813	in	$S_{top} = 337.18$	in <sup>3</sup>		
$I_x =$	7006.93	in <sup>4</sup>	$S_{bott.} = 337.18$	in <sup>3</sup>	$I_x =$	7006.93	in <sup>4</sup>	$S_{bott.} = 337.18$	in <sup>3</sup>		
$C_{top} =$	20.7813	in	A =	27.0234	in <sup>2</sup>	$C_{top} =$	20.7813	in	A =	27.0234	in <sup>2</sup>
$C_{bottom} =$	20.7813	in	$r_x =$	16.1025	in	$C_{bottom} =$	20.7813	in	$r_x =$	16.1025	in
J =	2.9542	in <sup>4</sup>	Z =	395.34	in <sup>3</sup>	Z =	395.34	in <sup>3</sup>			



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	15.0234	4.0000	60.0938	0.1761	0.0000	0.0000	0.1761
2	Top Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>		<b>27.02</b>		<b>108.09</b>	<b>64.18</b>		<b>0.00</b>	<b>64.18</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 16.04 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 16.04 in <sup>3</sup>
I <sub>y</sub> =	64.18	in <sup>4</sup>	S <sub>left</sub> = 16.04 in <sup>3</sup>	I <sub>y</sub> =	64.18	in <sup>4</sup>	S <sub>left</sub> = 16.04 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 27.0234 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 27.0234 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.5410 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.5410 in

Non-composite Capacities*		
	AB	AI
M	1011.53 k-ft	1011.53 k-ft
V	171.78 k	171.78 k

\*Noncompact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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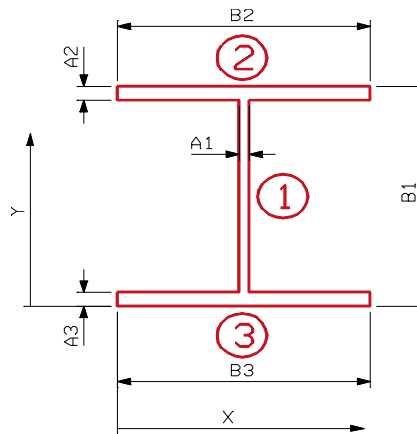
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 31.5000$  in
- $A_2 = t_f = 1.0000$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 1.0000$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



Fascia Stringer F1A-8 Avg

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		11.0625	15.7500	174.2344	802.2617	0.0000	0.0000	802.2617
2	Top Flange		8.0000	31.0000	248.0000	0.6667	15.2500	1860.5000	1861.1667
3	Bottom Flange		8.0000	0.5000	4.0000	0.6667	15.2500	1860.5000	1861.1667
<b>Total</b>			<b>27.06</b>		<b>426.23</b>	<b>803.60</b>		<b>3721.00</b>	<b>4524.60</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	15.7500 in	$S_{top} =$	287.28 in <sup>3</sup>	y-bar =	15.7500 in	$S_{top} =$	287.28 in <sup>3</sup>
$I_x =$	4524.60 in <sup>4</sup>	$S_{bott.} =$	287.28 in <sup>3</sup>	$I_x =$	4524.60 in <sup>4</sup>	$S_{bott.} =$	287.28 in <sup>3</sup>
$C_{top} =$	15.7500 in	A =	27.0625 in <sup>2</sup>	$C_{top} =$	15.7500 in	A =	27.0625 in <sup>2</sup>
$C_{bottom} =$	15.7500 in	$r_x =$	12.9302 in	$C_{bottom} =$	15.7500 in	$r_x =$	12.9302 in
J =	5.8519 in <sup>4</sup>	Z =	325.59 in <sup>3</sup>			Z =	325.59 in <sup>3</sup>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	11.0625	4.0000	44.2500	0.1296	0.0000	0.0000	0.1296
2	Top Flange	8.0000	4.0000	32.0000	42.6667	0.0000	0.0000	42.6667
3	Bottom Flange	8.0000	4.0000	32.0000	42.6667	0.0000	0.0000	42.6667
<b>Total</b>		<b>27.06</b>		<b>108.25</b>	<b>85.46</b>		<b>0.00</b>	<b>85.46</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000 in	S <sub>right</sub> =	21.37 in <sup>3</sup>	x-bar =	4.0000 in	S <sub>right</sub> =	21.37 in <sup>3</sup>
I <sub>y</sub> =	85.46 in <sup>4</sup>	S <sub>left</sub> =	21.37 in <sup>3</sup>	I <sub>y</sub> =	85.46 in <sup>4</sup>	S <sub>left</sub> =	21.37 in <sup>3</sup>
C <sub>right</sub> =	4.0000 in	A =	27.0625 in <sup>2</sup>	C <sub>right</sub> =	4.0000 in	A =	27.0625 in <sup>2</sup>
C <sub>left</sub> =	4.0000 in	r <sub>y</sub> =	1.7771 in	C <sub>left</sub> =	4.0000 in	r <sub>y</sub> =	1.7771 in

Non-composite Capacities*		
	AB	AI
M	976.76 k-ft	976.76 k-ft
V	207.62 k	207.62 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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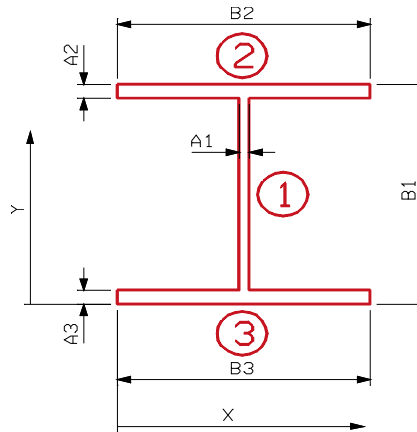
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 30.5000$  in
- $A_2 = t_f = 1.0000$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 1.0000$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



Fascia Stringer F1B-8 Avg

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		10.6875	15.2500	162.9844	723.4102	0.0000	0.0000	723.4102
2	Top Flange		8.0000	30.0000	240.0000	0.6667	14.7500	1740.5000	1741.1667
3	Bottom Flange		8.0000	0.5000	4.0000	0.6667	14.7500	1740.5000	1741.1667
<b>Total</b>			<b>26.69</b>		<b>406.98</b>	<b>724.74</b>		<b>3481.00</b>	<b>4205.74</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	15.2500	in	$S_{top} = 275.79$ in <sup>3</sup>	y-bar =	15.2500	in	$S_{top} = 275.79$ in <sup>3</sup>
$I_x =$	4205.74	n <sup>4</sup>	$S_{bottom} = 275.79$ in <sup>3</sup>	$I_x =$	4205.74	n <sup>4</sup>	$S_{bottom} = 275.79$ in <sup>3</sup>
$C_{top} =$	15.2500	in	A = 26.6875 in <sup>2</sup>	$C_{top} =$	15.2500	in	A = 26.6875 in <sup>2</sup>
$C_{bottom} =$	15.2500	in	$r_x = 12.5536$ in	$C_{bottom} =$	15.2500	in	$r_x = 12.5536$ in
J =	5.8343	in <sup>4</sup>	Z = 312.15 in <sup>3</sup>				Z = <b>312.15</b> in <sup>3</sup>



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Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	10.6875	4.0000	42.7500	0.1252	0.0000	0.0000	0.1252
2	Top Flange	8.0000	4.0000	32.0000	42.6667	0.0000	0.0000	42.6667
3	Bottom Flange	8.0000	4.0000	32.0000	42.6667	0.0000	0.0000	42.6667
<b>Total</b>		<b>26.69</b>		<b>106.75</b>	<b>85.46</b>		<b>0.00</b>	<b>85.46</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 21.36 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 21.36 in <sup>3</sup>
I <sub>y</sub> =	85.46	in <sup>4</sup>	S <sub>left</sub> = 21.36 in <sup>3</sup>	I <sub>y</sub> =	85.46	in <sup>4</sup>	S <sub>left</sub> = 21.36 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 26.6875 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 26.6875 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.7895 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.7895 in

Non-composite Capacities*		
	AB	AI
M	936.45 k-ft	936.45 k-ft
V	207.62 k	207.62 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/22/2012

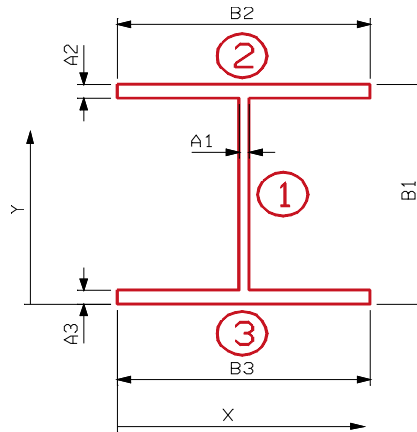
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 29.5000$  in
- $A_2 = t_f = 1.0000$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 1.0000$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



Fascia Stringer F1C-8 Avg

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		10.3125	14.7500	152.1094	649.9023	0.0000	0.0000	649.9023
2	Top Flange		8.0000	29.0000	232.0000	0.6667	14.2500	1624.5000	1625.1667
3	Bottom Flange		8.0000	0.5000	4.0000	0.6667	14.2500	1624.5000	1625.1667
<b>Total</b>			<b>26.31</b>		<b>388.11</b>	<b>651.24</b>		<b>3249.00</b>	<b>3900.24</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	14.7500 in	$S_{top} =$	264.42 in <sup>3</sup>	y-bar =	14.7500 in	$S_{top} =$	264.42 in <sup>3</sup>
$I_x =$	3900.24 in <sup>4</sup>	$S_{bottom} =$	264.42 in <sup>3</sup>	$I_x =$	3900.24 in <sup>4</sup>	$S_{bottom} =$	264.42 in <sup>3</sup>
$C_{top} =$	14.7500 in	A =	26.3125 in <sup>2</sup>	$C_{top} =$	14.7500 in	A =	26.3125 in <sup>2</sup>
$C_{bottom} =$	14.7500 in	$r_x =$	12.1749 in	$C_{bottom} =$	14.7500 in	$r_x =$	12.1749 in
J =	5.8167 in <sup>4</sup>	Z =	298.90 in <sup>3</sup>	Z =	298.90 in <sup>3</sup>		



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Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	10.3125	4.0000	41.2500	0.1208	0.0000	0.0000	0.1208
2	Top Flange	8.0000	4.0000	32.0000	42.6667	0.0000	0.0000	42.6667
3	Bottom Flange	8.0000	4.0000	32.0000	42.6667	0.0000	0.0000	42.6667
<b>Total</b>		<b>26.31</b>		<b>105.25</b>	<b>85.45</b>		<b>0.00</b>	<b>85.45</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 21.36 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 21.36 in <sup>3</sup>
I <sub>y</sub> =	85.45	in <sup>4</sup>	S <sub>left</sub> = 21.36 in <sup>3</sup>	I <sub>y</sub> =	85.45	in <sup>4</sup>	S <sub>left</sub> = 21.36 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 26.3125 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 26.3125 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.8021 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.8021 in

Non-composite Capacities*		
	AB	AI
M	896.70 k-ft	896.70 k-ft
V	207.62 k	207.62 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear





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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x86	<b>Bottom Angles:</b>	
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7700 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	10.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.4800 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	11.0000 in
$B_3 = t =$	0.4800 in	$Gap =$	0.5000 in

\*select from dropdown list

**Coped Stringer S1-8 @ FB C2**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	8.5470	10.6150	90.7264	0.4223	4.6875	187.7978	188.2201
	Web	4.6704	5.3650	25.0567	36.8467	0.5625	1.4779	38.3246
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.6775	112.8203	112.8932
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	2.9275	51.4226	69.4226
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.4275	0.0000	0.0000
<b>Total</b>		<b>22.72</b>		<b>134.66</b>	<b>55.34</b>		<b>353.52</b>	<b>408.86</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	5.9275	in	S <sub>top</sub> =	80.60	in <sup>3</sup>	y-bar =	5.9275	in	S <sub>top</sub> =	80.60	in <sup>3</sup>
I <sub>x</sub> =	408.86	in <sup>4</sup>	S <sub>bott.</sub> =	68.98	in <sup>3</sup>	I <sub>x</sub> =	408.86	in <sup>4</sup>	S <sub>bott.</sub> =	68.98	in <sup>3</sup>
C <sub>top</sub> =	5.0725	in	A =	22.7174	in <sup>2</sup>	C <sub>top</sub> =	5.0725	in	A =	22.7174	in <sup>2</sup>
C <sub>bottom</sub> =	5.9275	in	r <sub>x</sub> =	4.2424	in	C <sub>bottom</sub> =	5.9275	in	r <sub>x</sub> =	4.2424	in
J =	2.8395	in <sup>4</sup>	Z =	88.71	in <sup>3</sup>	Z =	88.71	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		8.5470	4.2400	36.2393	87.7563	1.3100	14.6675	102.4238
	Web		4.6704	4.2400	19.8025	0.0897	1.3100	8.0149	8.1045
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.8000	25.2700	27.0565
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.8000	9.7200	9.7825
2 (Right)	Horizontal Leg		1.7500	6.7300	11.7775	1.7865	1.1800	2.4367	4.2232
	Vertical Leg		3.0000	4.7300	14.1900	0.0625	0.8200	2.0172	2.0797
3	Additional Plate		0.0000	4.2400	0.0000	0.0000	1.3100	0.0000	0.0000
<b>Total</b>			<b>22.72</b>		<b>96.32</b>	<b>91.54</b>		<b>62.13</b>	<b>153.67</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.5500	in	S <sub>right</sub> =	27.69	in <sup>3</sup>	x-bar =	5.5500	in	S <sub>right</sub> =	27.69	in <sup>3</sup>
I <sub>y</sub> =	153.67	n <sup>4</sup>	S <sub>left</sub> =	27.69	in <sup>3</sup>	I <sub>y</sub> =	153.67	n <sup>4</sup>	S <sub>left</sub> =	27.69	in <sup>3</sup>
C <sub>right</sub> =	5.5500	in	A =	22.7174	in <sup>2</sup>	C <sub>right</sub> =	5.5500	in	A =	22.7174	in <sup>2</sup>
C <sub>left</sub> =	5.5500	in	r <sub>y</sub> =	2.6009	in	C <sub>left</sub> =	5.5500	in	r <sub>y</sub> =	2.6009	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	266.13 k-ft	266.13 k-ft
V	212.36 k	212.36 k

F <sub>y</sub> =	36.00 ksi
------------------	-----------

\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x86	<b>Bottom Angles:</b>
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.7700 in	$B_2 = L_h =$ 4.0000 in
$C_1 = d =$	10.2500 in	$C_2 = t =$ 0.6250 in
$D_1 = t_w =$	0.4800 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	$H =$ 10.7500 in
$B_3 = t =$	0.4800 in	$Gap =$ 0.5000 in

\*select from dropdown list

**Coped Stringer S1-8 @ FB C3**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	8.5470	10.3650	88.5897	0.4223	4.8745	203.0864	203.5087
	Web	4.5504	5.2400	23.8441	34.0789	0.2505	0.2855	34.3643
2	Horizontal Legs	4.2188	0.3125	1.3184	0.1373	5.1780	113.1101	113.2474
	Vertical Legs	7.5000	3.0000	22.5000	22.5000	2.4905	46.5180	69.0180
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	4.9905	0.0000	0.0000
<b>Total</b>		<b>24.82</b>		<b>136.25</b>	<b>57.14</b>		<b>363.00</b>	<b>420.14</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	5.4905 in	S <sub>top</sub> =	79.88 in <sup>3</sup>	y-bar =	5.4905 in	S <sub>top</sub> =	79.88 in <sup>3</sup>
I <sub>x</sub> =	420.14 in <sup>4</sup>	S <sub>bott.</sub> =	76.52 in <sup>3</sup>	I <sub>x</sub> =	420.14 in <sup>4</sup>	S <sub>bott.</sub> =	76.52 in <sup>3</sup>
C <sub>top</sub> =	5.2595 in	A =	24.8162 in <sup>2</sup>	C <sub>top</sub> =	5.2595 in	A =	24.8162 in <sup>2</sup>
C <sub>bottom</sub> =	5.4905 in	r <sub>x</sub> =	4.1146 in	C <sub>bottom</sub> =	5.4905 in	r <sub>x</sub> =	4.1146 in
J =	3.5645 in <sup>4</sup>	Z =	92.66 in <sup>3</sup>	Z =	92.66 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		8.5470	4.2400	36.2393	87.7563	1.3100	14.6675	102.4238
	Web		4.5504	4.2400	19.2937	0.0874	1.3100	7.8089	7.8963
2 (Left)	Horizontal Leg		2.1094	1.6875	3.5596	2.0023	3.8625	31.4696	33.4718
	Vertical Leg		3.7500	3.6875	13.8281	0.1221	1.8625	13.0084	13.1305
2 (Right)	Horizontal Leg		2.1094	6.7925	14.3279	2.0023	1.2425	3.2565	5.2587
	Vertical Leg		3.7500	4.7925	17.9719	0.1221	0.7575	2.1518	2.2738
3	Additional Plate		0.0000	4.2400	0.0000	0.0000	1.3100	0.0000	0.0000
<b>Total</b>			<b>24.82</b>		<b>105.22</b>	<b>92.09</b>		<b>72.36</b>	<b>164.46</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.5500 in	S <sub>right</sub> =	29.63 in <sup>3</sup>	x-bar =	5.5500 in	S <sub>right</sub> =	29.63 in <sup>3</sup>
I <sub>y</sub> =	164.46 in <sup>4</sup>	S <sub>left</sub> =	29.63 in <sup>3</sup>	I <sub>y</sub> =	164.46 in <sup>4</sup>	S <sub>left</sub> =	29.63 in <sup>3</sup>
C <sub>right</sub> =	5.5500 in	A =	24.8162 in <sup>2</sup>	C <sub>right</sub> =	5.5500 in	A =	24.8162 in <sup>2</sup>
C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.5743 in	C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.5743 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	277.98 k-ft	277.98 k-ft
V	235.30 k	235.30 k

F<sub>y</sub> = 36.00 ksi

\*Compact Section



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Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<u>Partial W-Section*</u>	W18x86	<u>Bottom Angles:</u>
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.7700 in	$B_2 = L_h =$ 4.0000 in
$C_1 = d =$	9.1250 in	$C_2 = t =$ 0.6250 in
$D_1 = t_w =$	0.4800 in	



<u>Additional Plate:</u>		<u>Miscellaneous:</u>
$A_3 = d =$	0.0000 in	$H =$ 9.6250 in
$B_3 = t =$	0.4800 in	$Gap =$ 0.5000 in

\*select from dropdown list

**Coped Stringer S1-8 @ FB C4**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	8.5470	9.2400	78.9743	0.4223	4.2330	153.1458	153.5681
	Web	4.0104	4.6775	18.7586	23.3292	0.3295	0.4355	23.7646
2	Horizontal Legs	4.2188	0.3125	1.3184	0.1373	4.6945	92.9752	93.1125
	Vertical Legs	7.5000	3.0000	22.5000	22.5000	2.0070	30.2111	52.7111
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	4.5070	0.0000	0.0000
<b>Total</b>		<b>24.28</b>		<b>121.55</b>	<b>46.39</b>		<b>276.77</b>	<b>323.16</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	5.0070 in	S <sub>top</sub> =	69.98 in <sup>3</sup>	y-bar =	5.0070 in	S <sub>top</sub> =	69.98 in <sup>3</sup>
I <sub>x</sub> =	323.16 in <sup>4</sup>	S <sub>bott.</sub> =	64.54 in <sup>3</sup>	I <sub>x</sub> =	323.16 in <sup>4</sup>	S <sub>bott.</sub> =	64.54 in <sup>3</sup>
C <sub>top</sub> =	4.6180 in	A =	24.2762 in <sup>2</sup>	C <sub>top</sub> =	4.6180 in	A =	24.2762 in <sup>2</sup>
C <sub>bottom</sub> =	5.0070 in	r <sub>x</sub> =	3.6485 in	C <sub>bottom</sub> =	5.0070 in	r <sub>x</sub> =	3.6485 in
J =	3.5230 in <sup>4</sup>	Z =	80.55 in <sup>3</sup>			Z =	80.55 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		8.5470	4.2400	36.2393	87.7563	1.3100	14.6675	102.4238
	Web		4.0104	4.2400	17.0041	0.0770	1.3100	6.8822	6.9592
2 (Left)	Horizontal Leg		2.1094	1.6875	3.5596	2.0023	3.8625	31.4696	33.4718
	Vertical Leg		3.7500	3.6875	13.8281	0.1221	1.8625	13.0084	13.1305
2 (Right)	Horizontal Leg		2.1094	6.7925	14.3279	2.0023	1.2425	3.2565	5.2587
	Vertical Leg		3.7500	4.7925	17.9719	0.1221	0.7575	2.1518	2.2738
3	Additional Plate		0.0000	4.2400	0.0000	0.0000	1.3100	0.0000	0.0000
<b>Total</b>			<b>24.28</b>		<b>102.93</b>	<b>92.08</b>		<b>71.44</b>	<b>163.52</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.5500 in	S <sub>right</sub> =	29.46 in <sup>3</sup>	x-bar =	5.5500 in	S <sub>right</sub> =	29.46 in <sup>3</sup>
I <sub>y</sub> =	163.52 in <sup>4</sup>	S <sub>left</sub> =	29.46 in <sup>3</sup>	I <sub>y</sub> =	163.52 in <sup>4</sup>	S <sub>left</sub> =	29.46 in <sup>3</sup>
C <sub>right</sub> =	5.5500 in	A =	24.2762 in <sup>2</sup>	C <sub>right</sub> =	5.5500 in	A =	24.2762 in <sup>2</sup>
C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.5953 in	C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.5953 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	241.65 k-ft	241.65 k-ft
V	224.02 k	224.02 k

F <sub>y</sub> =	36.00 ksi
------------------	-----------

\*Compact Section



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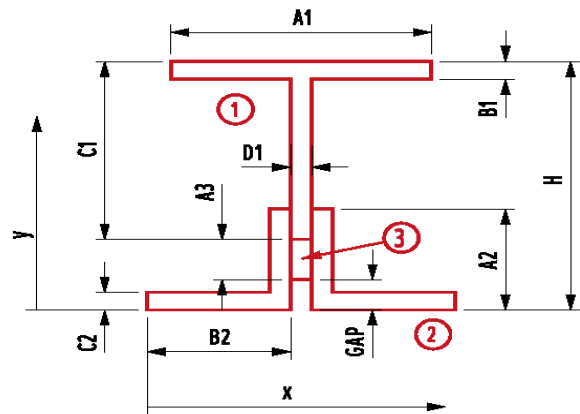
Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x86	<b>Bottom Angles:</b>
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.7700 in	$B_2 = L_h =$ 4.0000 in
$C_1 = d =$	8.3750 in	$C_2 = t =$ 0.5000 in
$D_1 = t_w =$	0.4800 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	H = 8.8750 in
$B_3 = t =$	0.4800 in	Gap = 0.5000 in

\*select from dropdown list

**Coped Stringer S1-8 @ FB C5**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	8.5470	8.4900	72.5640	0.4223	3.5519	107.8263	108.2485
	Web	3.6504	4.3025	15.7058	17.5937	0.6356	1.4749	19.0686
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	4.6881	76.9254	76.9983
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	1.9381	22.5384	40.5384
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	4.4381	0.0000	0.0000
<b>Total</b>		<b>21.70</b>		<b>107.14</b>	<b>36.09</b>		<b>208.76</b>	<b>244.85</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	4.9381 in	S <sub>top</sub> =	62.20 in <sup>3</sup>	y-bar =	4.9381 in	S <sub>top</sub> =	62.20 in <sup>3</sup>
I <sub>x</sub> =	244.85 in <sup>4</sup>	S <sub>bottom</sub> =	49.58 in <sup>3</sup>	I <sub>x</sub> =	244.85 in <sup>4</sup>	S <sub>bottom</sub> =	49.58 in <sup>3</sup>
C <sub>top</sub> =	3.9369 in	A =	21.6974 in <sup>2</sup>	C <sub>top</sub> =	3.9369 in	A =	21.6974 in <sup>2</sup>
C <sub>bottom</sub> =	4.9381 in	r <sub>x</sub> =	3.3593 in	C <sub>bottom</sub> =	4.9381 in	r <sub>x</sub> =	3.3593 in
J =	2.7612 in <sup>4</sup>	Z =	66.60 in <sup>3</sup>	Z =	66.60 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		8.5470	4.2400	36.2393	87.7563	1.3100	14.6675	102.4238
	Web		3.6504	4.2400	15.4777	0.0701	1.3100	6.2645	6.3345
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.8000	25.2700	27.0565
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.8000	9.7200	9.7825
2 (Right)	Horizontal Leg		1.7500	6.7300	11.7775	1.7865	1.1800	2.4367	4.2232
	Vertical Leg		3.0000	4.7300	14.1900	0.0625	0.8200	2.0172	2.0797
3	Additional Plate		0.0000	4.2400	0.0000	0.0000	1.3100	0.0000	0.0000
<b>Total</b>			<b>21.70</b>		<b>92.00</b>	<b>91.52</b>		<b>60.38</b>	<b>151.90</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.5500 in	S <sub>right</sub> =	27.37 in <sup>3</sup>	x-bar =	5.5500 in	S <sub>right</sub> =	27.37 in <sup>3</sup>
I <sub>y</sub> =	151.90 in <sup>4</sup>	S <sub>left</sub> =	27.37 in <sup>3</sup>	I <sub>y</sub> =	151.90 in <sup>4</sup>	S <sub>left</sub> =	27.37 in <sup>3</sup>
C <sub>right</sub> =	5.5500 in	A =	21.6974 in <sup>2</sup>	C <sub>right</sub> =	5.5500 in	A =	21.6974 in <sup>2</sup>
C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.6459 in	C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.6459 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	199.80 k-ft	199.80 k-ft
V	191.06 k	191.06 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section





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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x97	<b>Bottom Angles:</b>
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.8700 in	$B_2 = L_h =$ 4.0000 in
$C_1 = d =$	11.7500 in	$C_2 = t =$ 0.5000 in
$D_1 = t_w =$	0.5350 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	$H =$ 12.2500 in
$B_3 = t =$	0.5350 in	$GAP =$ 0.5000 in

\*select from dropdown list

**Coped Stringer S2-8 @ FB C2**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6570	11.8150	114.0975	0.6091	5.1071	251.8807	252.4898
	Web	5.8208	5.9400	34.5756	57.4195	0.7679	3.4321	60.8516
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.4579	145.9646	146.0375
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.7079	82.4901	100.4901
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.2079	0.0000	0.0000
<b>Total</b>		<b>24.98</b>		<b>167.55</b>	<b>76.10</b>		<b>483.77</b>	<b>559.87</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	6.7079	in	S <sub>top</sub> =	101.02	in <sup>3</sup>	y-bar =	6.7079	in	S <sub>top</sub> =	101.02	in <sup>3</sup>
I <sub>x</sub> =	559.87	in <sup>4</sup>	S <sub>bott.</sub> =	83.46	in <sup>3</sup>	I <sub>x</sub> =	559.87	in <sup>4</sup>	S <sub>bott.</sub> =	83.46	in <sup>3</sup>
C <sub>top</sub> =	5.5421	in	A =	24.9778	in <sup>2</sup>	C <sub>top</sub> =	5.5421	in	A =	24.9778	in <sup>2</sup>
C <sub>bottom</sub> =	6.7079	in	r <sub>x</sub> =	4.7344	in	C <sub>bottom</sub> =	6.7079	in	r <sub>x</sub> =	4.7344	in
J =	3.7835	in <sup>4</sup>	Z =	110.11	in <sup>3</sup>	Z =	110.11	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6570	4.2675	41.2112	99.1532	1.2825	15.8839	115.0371
	Web		5.8208	4.2675	24.8403	0.1388	1.2825	9.5741	9.7129
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.8000	25.2700	27.0565
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.8000	9.7200	9.7825
2 (Right)	Horizontal Leg		1.7500	6.7850	11.8738	1.7865	1.2350	2.6691	4.4556
	Vertical Leg		3.0000	4.7850	14.3550	0.0625	0.7650	1.7557	1.8182
3	Additional Plate		0.0000	4.2675	0.0000	0.0000	1.2825	0.0000	0.0000
<b>Total</b>			<b>24.98</b>		<b>106.59</b>	<b>102.99</b>		<b>64.87</b>	<b>167.86</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.5500	in	S <sub>right</sub> =	30.25	in <sup>3</sup>	x-bar =	5.5500	in	S <sub>right</sub> =	30.25	in <sup>3</sup>
I <sub>y</sub> =	167.86	in <sup>4</sup>	S <sub>left</sub> =	30.25	in <sup>3</sup>	I <sub>y</sub> =	167.86	in <sup>4</sup>	S <sub>left</sub> =	30.25	in <sup>3</sup>
C <sub>right</sub> =	5.5500	in	A =	24.9778	in <sup>2</sup>	C <sub>right</sub> =	5.5500	in	A =	24.9778	in <sup>2</sup>
C <sub>left</sub> =	5.5500	in	r <sub>y</sub> =	2.5924	in	C <sub>left</sub> =	5.5500	in	r <sub>y</sub> =	2.5924	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	330.33 k-ft	330.33 k-ft
V	236.38 k	236.38 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x97	<b>Bottom Angles:</b>	
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8700 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	10.8750 in	$C_2 = t =$	0.7500 in
$D_1 = t_w =$	0.5350 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	11.3750 in
$B_3 = t =$	0.5350 in	$Gap =$	0.5000 in

\*select from dropdown list

**Coped Stringer S2-8 @ FB C3**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6570	10.9400	105.6476	0.6091	5.2647	267.6651	268.2742
	Web	5.3527	5.5025	29.4531	44.6502	0.1728	0.1598	44.8100
2	Horizontal Legs	4.8750	0.3750	1.8281	0.2285	5.3003	136.9535	137.1821
	Vertical Legs	9.0000	3.0000	27.0000	27.0000	2.6753	64.4144	91.4144
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.1753	0.0000	0.0000
<b>Total</b>		<b>28.88</b>		<b>163.93</b>	<b>72.49</b>		<b>469.19</b>	<b>541.68</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	5.6753	in	S <sub>top</sub> =	95.04	in <sup>3</sup>	y-bar =	5.6753	in	S <sub>top</sub> =	95.04	in <sup>3</sup>
I <sub>x</sub> =	541.68	in <sup>4</sup>	S <sub>bott.</sub> =	95.45	in <sup>3</sup>	I <sub>x</sub> =	541.68	in <sup>4</sup>	S <sub>bott.</sub> =	95.45	in <sup>3</sup>
C <sub>top</sub> =	5.6997	in	A =	28.8847	in <sup>2</sup>	C <sub>top</sub> =	5.6997	in	A =	28.8847	in <sup>2</sup>
C <sub>bottom</sub> =	5.6753	in	r <sub>x</sub> =	4.3305	in	C <sub>bottom</sub> =	5.6753	in	r <sub>x</sub> =	4.3305	in
J =	5.5487	in <sup>4</sup>	Z =	112.88	in <sup>3</sup>	Z =	112.88	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6570	4.2675	41.2112	99.1532	1.2825	15.8839	115.0371
	Web		5.3527	4.2675	22.8425	0.1277	1.2825	8.8041	8.9318
2 (Left)	Horizontal Leg		2.4375	1.6250	3.9609	2.1455	3.9250	37.5512	39.6967
	Vertical Leg		4.5000	3.6250	16.3125	0.2109	1.9250	16.6753	16.8863
2 (Right)	Horizontal Leg		2.4375	6.9100	16.8431	2.1455	1.3600	4.5084	6.6539
	Vertical Leg		4.5000	4.9100	22.0950	0.2109	0.6400	1.8432	2.0541
3	Additional Plate		0.0000	4.2675	0.0000	0.0000	1.2825	0.0000	0.0000
<b>Total</b>			<b>28.88</b>		<b>123.27</b>	<b>103.99</b>		<b>85.27</b>	<b>189.26</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.5500	in	S <sub>right</sub> =	34.10	in <sup>3</sup>	x-bar =	5.5500	in	S <sub>right</sub> =	34.10	in <sup>3</sup>
I <sub>y</sub> =	189.26	n <sup>4</sup>	S <sub>left</sub> =	34.10	in <sup>3</sup>	I <sub>y</sub> =	189.26	n <sup>4</sup>	S <sub>left</sub> =	34.10	in <sup>3</sup>
C <sub>right</sub> =	5.5500	in	A =	28.8847	in <sup>2</sup>	C <sub>right</sub> =	5.5500	in	A =	28.8847	in <sup>2</sup>
C <sub>left</sub> =	5.5500	in	r <sub>y</sub> =	2.5597	in	C <sub>left</sub> =	5.5500	in	r <sub>y</sub> =	2.5597	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	338.64 k-ft	338.64 k-ft
V	276.19 k	276.19 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x97	<b>Bottom Angles:</b>
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.8700 in	$B_2 = L_h =$ 4.0000 in
$C_1 = d =$	9.8750 in	$C_2 = t =$ 0.7500 in
$D_1 = t_w =$	0.5350 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	$H =$ 10.3750 in
$B_3 = t =$	0.5350 in	$GAP =$ 0.5000 in

\*select from dropdown list

**Coped Stringer S2-8 @ FB C4**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6570	9.9400	95.9906	0.6091	4.6871	212.1502	212.7593
	Web	4.8177	5.0025	24.1004	32.5554	0.2504	0.3022	32.8576
2	Horizontal Legs	4.8750	0.3750	1.8281	0.2285	4.8779	115.9972	116.2257
	Vertical Legs	9.0000	3.0000	27.0000	27.0000	2.2529	45.6816	72.6816
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	4.7529	0.0000	0.0000
<b>Total</b>		<b>28.35</b>		<b>148.92</b>	<b>60.39</b>		<b>374.13</b>	<b>434.52</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties					As-Inspected Section Properties						
y-bar =	5.2529	in	S <sub>top</sub> =	84.83	in <sup>3</sup>	y-bar =	5.2529	in	S <sub>top</sub> =	84.83	in <sup>3</sup>
I <sub>x</sub> =	434.52	in <sup>4</sup>	S <sub>bott.</sub> =	82.72	in <sup>3</sup>	I <sub>x</sub> =	434.52	in <sup>4</sup>	S <sub>bott.</sub> =	82.72	in <sup>3</sup>
C <sub>top</sub> =	5.1221	in	A =	28.3497	in <sup>2</sup>	C <sub>top</sub> =	5.1221	in	A =	28.3497	in <sup>2</sup>
C <sub>bottom</sub> =	5.2529	in	r <sub>x</sub> =	3.9150	in	C <sub>bottom</sub> =	5.2529	in	r <sub>x</sub> =	3.9150	in
J =	5.4977	in <sup>4</sup>	Z =	100.42	in <sup>3</sup>	Z =	100.42	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6570	4.2675	41.2112	99.1532	1.2825	15.8839	115.0371
	Web		4.8177	4.2675	20.5594	0.1149	1.2825	7.9241	8.0391
2 (Left)	Horizontal Leg		2.4375	1.6250	3.9609	2.1455	3.9250	37.5512	39.6967
	Vertical Leg		4.5000	3.6250	16.3125	0.2109	1.9250	16.6753	16.8863
2 (Right)	Horizontal Leg		2.4375	6.9100	16.8431	2.1455	1.3600	4.5084	6.6539
	Vertical Leg		4.5000	4.9100	22.0950	0.2109	0.6400	1.8432	2.0541
3	Additional Plate		0.0000	4.2675	0.0000	0.0000	1.2825	0.0000	0.0000
<b>Total</b>			<b>28.35</b>		<b>120.98</b>	<b>103.98</b>		<b>84.39</b>	<b>188.37</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	5.5500	in	S <sub>right</sub> =	33.94	in <sup>3</sup>	x-bar =	5.5500	in	S <sub>right</sub> =	33.94	in <sup>3</sup>
I <sub>y</sub> =	188.37	in <sup>4</sup>	S <sub>left</sub> =	33.94	in <sup>3</sup>	I <sub>y</sub> =	188.37	in <sup>4</sup>	S <sub>left</sub> =	33.94	in <sup>3</sup>
C <sub>right</sub> =	5.5500	in	A =	28.3497	in <sup>2</sup>	C <sub>right</sub> =	5.5500	in	A =	28.3497	in <sup>2</sup>
C <sub>left</sub> =	5.5500	in	r <sub>y</sub> =	2.5777	in	C <sub>left</sub> =	5.5500	in	r <sub>y</sub> =	2.5777	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	301.26 k-ft	301.26 k-ft
V	265.02 k	265.02 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x97	<b>Bottom Angles:</b>
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.8700 in	$B_2 = L_h =$ 4.0000 in
$C_1 = d =$	9.0000 in	$C_2 = t =$ 0.5000 in
$D_1 = t_w =$	0.5350 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	H = 9.5000 in
$B_3 = t =$	0.5350 in	Gap = 0.5000 in

\*select from dropdown list

**Coped Stringer S2-8 @ FB C5**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6570	9.0650	87.5407	0.6091	3.6932	131.7221	132.3312
	Web	4.3496	4.5650	19.8557	23.9576	0.8068	2.8309	26.7886
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.1218	91.8133	91.8862
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	2.3718	33.7513	51.7513
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	4.8718	0.0000	0.0000
<b>Total</b>		<b>23.51</b>		<b>126.27</b>	<b>42.64</b>		<b>260.12</b>	<b>302.76</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	5.3718 in	S <sub>top</sub> =	73.34 in <sup>3</sup>	y-bar =	5.3718 in	S <sub>top</sub> =	73.34 in <sup>3</sup>
I <sub>x</sub> =	302.76 in <sup>4</sup>	S <sub>bott.</sub> =	56.36 in <sup>3</sup>	I <sub>x</sub> =	302.76 in <sup>4</sup>	S <sub>bott.</sub> =	56.36 in <sup>3</sup>
C <sub>top</sub> =	4.1282 in	A =	23.5066 in <sup>2</sup>	C <sub>top</sub> =	4.1282 in	A =	23.5066 in <sup>2</sup>
C <sub>bottom</sub> =	5.3718 in	r <sub>x</sub> =	3.5888 in	C <sub>bottom</sub> =	5.3718 in	r <sub>x</sub> =	3.5888 in
J =	3.6431 in <sup>4</sup>	Z =	77.36 in <sup>3</sup>			Z =	77.36 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6570	4.2675	41.2112	99.1532	1.2825	15.8839	115.0371
	Web	4.3496	4.2675	18.5617	0.1037	1.2825	7.1542	7.2579
2 (Left)	Horizontal Leg	1.7500	1.7500	3.0625	1.7865	3.8000	25.2700	27.0565
	Vertical Leg	3.0000	3.7500	11.2500	0.0625	1.8000	9.7200	9.7825
2 (Right)	Horizontal Leg	1.7500	6.7850	11.8738	1.7865	1.2350	2.6691	4.4556
	Vertical Leg	3.0000	4.7850	14.3550	0.0625	0.7650	1.7557	1.8182
3	Additional Plate	0.0000	4.2675	0.0000	0.0000	1.2825	0.0000	0.0000
<b>Total</b>		<b>23.51</b>		<b>100.31</b>	<b>102.95</b>		<b>62.45</b>	<b>165.41</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.5500 in	S <sub>right</sub> =	29.80 in <sup>3</sup>	x-bar =	5.5500 in	S <sub>right</sub> =	29.80 in <sup>3</sup>
I <sub>y</sub> =	165.41 in <sup>4</sup>	S <sub>left</sub> =	29.80 in <sup>3</sup>	I <sub>y</sub> =	165.41 in <sup>4</sup>	S <sub>left</sub> =	29.80 in <sup>3</sup>
C <sub>right</sub> =	5.5500 in	A =	23.5066 in <sup>2</sup>	C <sub>right</sub> =	5.5500 in	A =	23.5066 in <sup>2</sup>
C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.6527 in	C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.6527 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	232.08 k-ft	232.08 k-ft
V	205.66 k	205.66 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section





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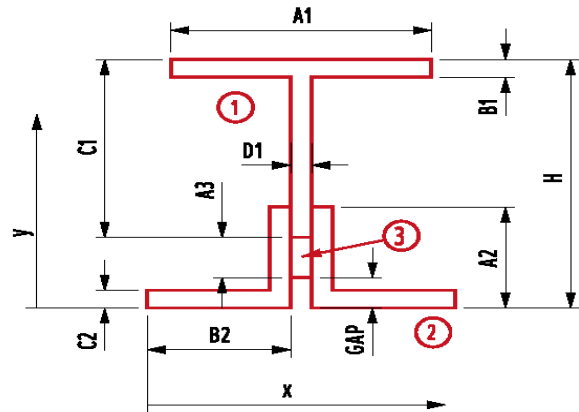
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

Note that this stringer was missing from the shop drawings, therefore the dimensions are estimated

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x86	<b>Bottom Angles:</b>	
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7700 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	12.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.4800 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	13.0000 in
$B_3 = t =$	0.4800 in	$Gap =$	0.5000 in

\*select from dropdown list

Coped Stringer S3-8 @ FB C2

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	8.5470	12.6150	107.8204	0.4223	5.7505	282.6369	283.0592
	Web	5.6304	6.3650	35.8375	64.5586	0.4995	1.4046	65.9632
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.6145	153.1294	153.2024
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.8645	89.6050	107.6050
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.3645	0.0000	0.0000
<b>Total</b>		<b>23.68</b>		<b>162.53</b>	<b>83.05</b>		<b>526.78</b>	<b>609.83</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.8645 in	S <sub>top</sub> =	99.39 in <sup>3</sup>	y-bar =	6.8645 in	S <sub>top</sub> =	99.39 in <sup>3</sup>
I <sub>x</sub> =	609.83 in <sup>4</sup>	S <sub>bott.</sub> =	88.84 in <sup>3</sup>	I <sub>x</sub> =	609.83 in <sup>4</sup>	S <sub>bott.</sub> =	88.84 in <sup>3</sup>
C <sub>top</sub> =	6.1355 in	A =	23.6774 in <sup>2</sup>	C <sub>top</sub> =	6.1355 in	A =	23.6774 in <sup>2</sup>
C <sub>bottom</sub> =	6.8645 in	r <sub>x</sub> =	5.0750 in	C <sub>bottom</sub> =	6.8645 in	r <sub>x</sub> =	5.0750 in
J =	2.9133 in <sup>4</sup>	Z =	111.18 in <sup>3</sup>	Z =	<b>111.18</b> in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		8.5470	4.2400	36.2393	87.7563	1.3100	14.6675	102.4238
	Web		5.6304	4.2400	23.8729	0.1081	1.3100	9.6623	9.7704
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.8000	25.2700	27.0565
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.8000	9.7200	9.7825
2 (Right)	Horizontal Leg		1.7500	6.7300	11.7775	1.7865	1.1800	2.4367	4.2232
	Vertical Leg		3.0000	4.7300	14.1900	0.0625	0.8200	2.0172	2.0797
3	Additional Plate		0.0000	4.2400	0.0000	0.0000	1.3100	0.0000	0.0000
<b>Total</b>			<b>23.68</b>		<b>100.39</b>	<b>91.56</b>		<b>63.77</b>	<b>155.34</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.5500 in	S <sub>right</sub> =	27.99 in <sup>3</sup>	x-bar =	5.5500 in	S <sub>right</sub> =	27.99 in <sup>3</sup>
I <sub>y</sub> =	155.34 in <sup>4</sup>	S <sub>left</sub> =	27.99 in <sup>3</sup>	I <sub>y</sub> =	155.34 in <sup>4</sup>	S <sub>left</sub> =	27.99 in <sup>3</sup>
C <sub>right</sub> =	5.5500 in	A =	23.6774 in <sup>2</sup>	C <sub>right</sub> =	5.5500 in	A =	23.6774 in <sup>2</sup>
C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.5614 in	C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.5614 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
<b>M</b>	333.54 k-ft	333.54 k-ft
<b>V</b>	232.40 k	232.40 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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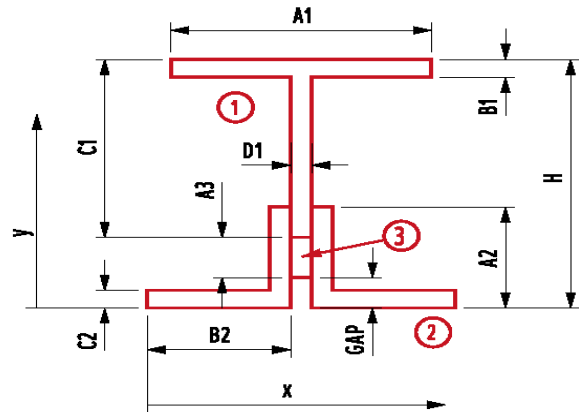
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

Note that this stringer was missing from the shop drawings, therefore the dimensions are estimated

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x86	<b>Bottom Angles:</b>	
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7700 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	11.4375 in	$C_2 = t =$	0.6250 in
$D_1 = t_w =$	0.4800 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	11.9375 in
$B_3 = t =$	0.4800 in	$Gap =$	0.5000 in

\*select from dropdown list

**Coped Stringer S3-8 @ FB C3**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	8.5470	11.5525	98.7392	0.4223	5.5481	263.0883	263.5106
	Web	5.1204	5.8338	29.8711	48.5566	0.1707	0.1491	48.7057
2	Horizontal Legs	4.2188	0.3125	1.3184	0.1373	5.6919	136.6781	136.8154
	Vertical Legs	7.5000	3.0000	22.5000	22.5000	3.0044	67.6983	90.1983
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.5044	0.0000	0.0000
<b>Total</b>		<b>25.39</b>		<b>152.43</b>	<b>71.62</b>		<b>467.61</b>	<b>539.23</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	6.0044	in	S <sub>top</sub> =	90.89	in <sup>3</sup>	y-bar =	6.0044	in	S <sub>top</sub> =	90.89	in <sup>3</sup>
I <sub>x</sub> =	539.23	in <sup>4</sup>	S <sub>bottom</sub> =	89.81	in <sup>3</sup>	I <sub>x</sub> =	539.23	in <sup>4</sup>	S <sub>bottom</sub> =	89.81	in <sup>3</sup>
C <sub>top</sub> =	5.9331	in	A =	25.3862	in <sup>2</sup>	C <sub>top</sub> =	5.9331	in	A =	25.3862	in <sup>2</sup>
C <sub>bottom</sub> =	6.0044	in	r <sub>x</sub> =	4.6088	in	C <sub>bottom</sub> =	6.0044	in	r <sub>x</sub> =	4.6088	in
J =	3.6083	in <sup>4</sup>	Z =	106.02	in <sup>3</sup>	Z =	106.02	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	8.5470	4.2400	36.2393	87.7563	1.3100	14.6675	102.4238
	Web	5.1204	4.2400	21.7105	0.0983	1.3100	8.7871	8.8854
2 (Left)	Horizontal Leg	2.1094	1.6875	3.5596	2.0023	3.8625	31.4696	33.4718
	Vertical Leg	3.7500	3.6875	13.8281	0.1221	1.8625	13.0084	13.1305
2 (Right)	Horizontal Leg	2.1094	6.7925	14.3279	2.0023	1.2425	3.2565	5.2587
	Vertical Leg	3.7500	4.7925	17.9719	0.1221	0.7575	2.1518	2.2738
3	Additional Plate	0.0000	4.2400	0.0000	0.0000	1.3100	0.0000	0.0000
<b>Total</b>		<b>25.39</b>		<b>107.64</b>	<b>92.10</b>		<b>73.34</b>	<b>165.44</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.5500	in	S <sub>right</sub> =	29.81	in <sup>3</sup>	x-bar =	5.5500	in	S <sub>right</sub> =	29.81	in <sup>3</sup>
I <sub>y</sub> =	165.44	in <sup>4</sup>	S <sub>left</sub> =	29.81	in <sup>3</sup>	I <sub>y</sub> =	165.44	in <sup>4</sup>	S <sub>left</sub> =	29.81	in <sup>3</sup>
C <sub>right</sub> =	5.5500	in	A =	25.3862	in <sup>2</sup>	C <sub>right</sub> =	5.5500	in	A =	25.3862	in <sup>2</sup>
C <sub>left</sub> =	5.5500	in	r <sub>y</sub> =	2.5529	in	C <sub>left</sub> =	5.5500	in	r <sub>y</sub> =	2.5529	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	318.06 k-ft	318.06 k-ft
V	247.20 k	247.20 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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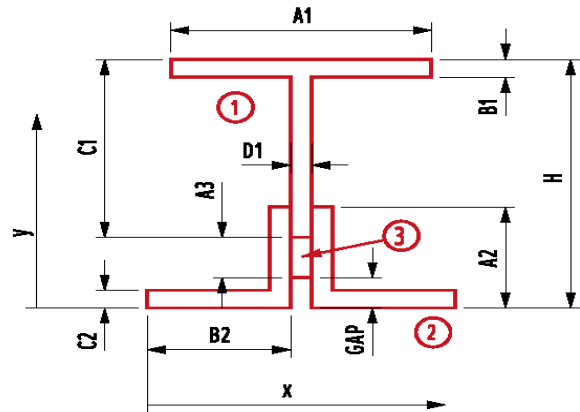
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

Note that this stringer was missing from the shop drawings, therefore the dimensions are estimated

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x86	<b>Bottom Angles:</b>
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.7700 in	$B_2 = L_h =$ 4.0000 in
$C_1 = d =$	10.4375 in	$C_2 = t =$ 0.6250 in
$D_1 = t_w =$	0.4800 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	H = 10.9375 in
$B_3 = t =$	0.4800 in	Gap = 0.5000 in

\*select from dropdown list

**Coped Stringer S3-8 @ FB C4**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	8.5470	10.5525	90.1922	0.4223	4.9811	212.0655	212.4877
	Web	4.6404	5.3338	24.7507	36.1412	0.2376	0.2620	36.4032
2	Horizontal Legs	4.2188	0.3125	1.3184	0.1373	5.2589	116.6724	116.8098
	Vertical Legs	7.5000	3.0000	22.5000	22.5000	2.5714	49.5895	72.0895
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.0714	0.0000	0.0000
<b>Total</b>		<b>24.91</b>		<b>138.76</b>	<b>59.20</b>		<b>378.59</b>	<b>437.79</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties					As-Inspected Section Properties						
y-bar =	5.5714	in	S <sub>top</sub> =	81.58	in <sup>3</sup>	y-bar =	5.5714	in	S <sub>top</sub> =	81.58	in <sup>3</sup>
I <sub>x</sub> =	437.79	in <sup>4</sup>	S <sub>bott.</sub> =	78.58	in <sup>3</sup>	I <sub>x</sub> =	437.79	in <sup>4</sup>	S <sub>bott.</sub> =	78.58	in <sup>3</sup>
C <sub>top</sub> =	5.3661	in	A =	24.9062	in <sup>2</sup>	C <sub>top</sub> =	5.3661	in	A =	24.9062	in <sup>2</sup>
C <sub>bottom</sub> =	5.5714	in	r <sub>x</sub> =	4.1926	in	C <sub>bottom</sub> =	5.5714	in	r <sub>x</sub> =	4.1926	in
J =	3.5714	in <sup>4</sup>	Z =	94.73	in <sup>3</sup>	Z =	94.73	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		8.5470	4.2400	36.2393	87.7563	1.3100	14.6675	102.4238
	Web		4.6404	4.2400	19.6753	0.0891	1.3100	7.9634	8.0525
2 (Left)	Horizontal Leg		2.1094	1.6875	3.5596	2.0023	3.8625	31.4696	33.4718
	Vertical Leg		3.7500	3.6875	13.8281	0.1221	1.8625	13.0084	13.1305
2 (Right)	Horizontal Leg		2.1094	6.7925	14.3279	2.0023	1.2425	3.2565	5.2587
	Vertical Leg		3.7500	4.7925	17.9719	0.1221	0.7575	2.1518	2.2738
3	Additional Plate		0.0000	4.2400	0.0000	0.0000	1.3100	0.0000	0.0000
<b>Total</b>			<b>24.91</b>		<b>105.60</b>	<b>92.09</b>		<b>72.52</b>	<b>164.61</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	5.5500	in	S <sub>right</sub> =	29.66	in <sup>3</sup>	x-bar =	5.5500	in	S <sub>right</sub> =	29.66	in <sup>3</sup>
I <sub>y</sub> =	164.61	in <sup>4</sup>	S <sub>left</sub> =	29.66	in <sup>3</sup>	I <sub>y</sub> =	164.61	in <sup>4</sup>	S <sub>left</sub> =	29.66	in <sup>3</sup>
C <sub>right</sub> =	5.5500	in	A =	24.9062	in <sup>2</sup>	C <sub>right</sub> =	5.5500	in	A =	24.9062	in <sup>2</sup>
C <sub>left</sub> =	5.5500	in	r <sub>y</sub> =	2.5708	in	C <sub>left</sub> =	5.5500	in	r <sub>y</sub> =	2.5708	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	284.19 k-ft	284.19 k-ft
V	237.18 k	237.18 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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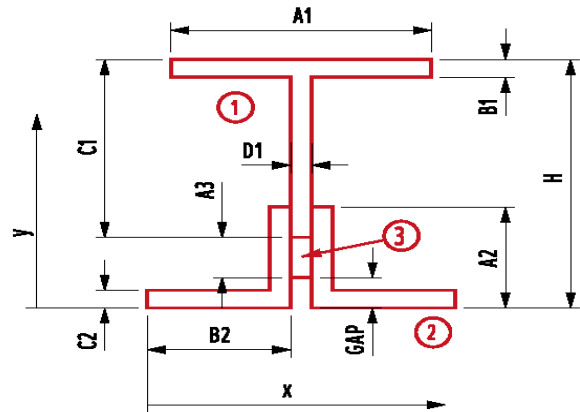
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

Note that this stringer was missing from the shop drawings, therefore the dimensions are estimated

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x86	<b>Bottom Angles:</b>
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.7700 in	$B_2 = L_h =$ 4.0000 in
$C_1 = d =$	9.4375 in	$C_2 = t =$ 0.5000 in
$D_1 = t_w =$	0.4800 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	H = 9.9375 in
$B_3 = t =$	0.4800 in	Gap = 0.5000 in

\*select from dropdown list

**Coped Stringer S3-8 @ FB C5**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	8.5470	9.5525	81.6452	0.4223	4.1205	145.1156	145.5379
	Web	4.1604	4.8338	20.1103	26.0460	0.5982	1.4890	27.5350
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.1820	93.9859	94.0588
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	2.4320	35.4877	53.4877
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	4.9320	0.0000	0.0000
<b>Total</b>		<b>22.21</b>		<b>120.63</b>	<b>44.54</b>		<b>276.08</b>	<b>320.62</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	5.4320 in	S <sub>top</sub> =	71.16 in <sup>3</sup>	y-bar =	5.4320 in	S <sub>top</sub> =	71.16 in <sup>3</sup>
I <sub>x</sub> =	320.62 in <sup>4</sup>	S <sub>bott.</sub> =	59.02 in <sup>3</sup>	I <sub>x</sub> =	320.62 in <sup>4</sup>	S <sub>bott.</sub> =	59.02 in <sup>3</sup>
C <sub>top</sub> =	4.5055 in	A =	22.2074 in <sup>2</sup>	C <sub>top</sub> =	4.5055 in	A =	22.2074 in <sup>2</sup>
C <sub>bottom</sub> =	5.4320 in	r <sub>x</sub> =	3.7997 in	C <sub>bottom</sub> =	5.4320 in	r <sub>x</sub> =	3.7997 in
J =	2.8004 in <sup>4</sup>	Z =	77.43 in <sup>3</sup>	Z =	<b>77.43</b> in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		8.5470	4.2400	36.2393	87.7563	1.3100	14.6675	102.4238
	Web		4.1604	4.2400	17.6401	0.0799	1.3100	7.1397	7.2195
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.8000	25.2700	27.0565
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.8000	9.7200	9.7825
2 (Right)	Horizontal Leg		1.7500	6.7300	11.7775	1.7865	1.1800	2.4367	4.2232
	Vertical Leg		3.0000	4.7300	14.1900	0.0625	0.8200	2.0172	2.0797
3	Additional Plate		0.0000	4.2400	0.0000	0.0000	1.3100	0.0000	0.0000
<b>Total</b>			<b>22.21</b>		<b>94.16</b>	<b>91.53</b>		<b>61.25</b>	<b>152.79</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.5500 in	S <sub>right</sub> =	27.53 in <sup>3</sup>	x-bar =	5.5500 in	S <sub>right</sub> =	27.53 in <sup>3</sup>
I <sub>y</sub> =	152.79 in <sup>4</sup>	S <sub>left</sub> =	27.53 in <sup>3</sup>	I <sub>y</sub> =	152.79 in <sup>4</sup>	S <sub>left</sub> =	27.53 in <sup>3</sup>
C <sub>right</sub> =	5.5500 in	A =	22.2074 in <sup>2</sup>	C <sub>right</sub> =	5.5500 in	A =	22.2074 in <sup>2</sup>
C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.6230 in	C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.6230 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	232.29 k-ft	232.29 k-ft
V	201.71 k	201.71 k

F <sub>y</sub> =	<b>36.00 ksi</b>
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\*Compact Section





Made By CTG  
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Date 3/14/2012  
Date 3/27/2012

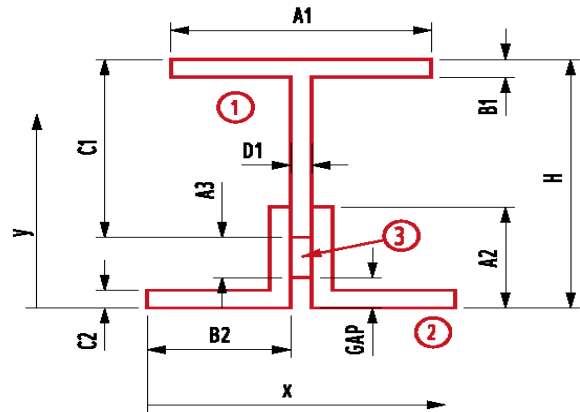
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

Note that this stringer was missing from the shop drawings, therefore the dimensions are estimated

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x86	<b>Bottom Angles:</b>
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.7700 in	$B_2 = L_h =$ 4.0000 in
$C_1 = d =$	13.1875 in	$C_2 = t =$ 0.5000 in
$D_1 = t_w =$	0.4800 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	$H =$ 13.6875 in
$B_3 = t =$	0.4800 in	$Gap =$ 0.5000 in

\*select from dropdown list

**Coped Stringer S4-8 @ FB C2**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	8.5470	13.3025	113.6965	0.4223	6.1148	319.5776	319.9999
	Web	5.9604	6.7088	39.9868	76.5883	0.4790	1.3673	77.9557
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.9377	168.4615	168.5344
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.1877	105.2216	123.2216
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.6877	0.0000	0.0000
<b>Total</b>		<b>24.01</b>		<b>172.56</b>	<b>95.08</b>		<b>594.63</b>	<b>689.71</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	7.1877 in	S <sub>top</sub> =	106.11 in <sup>3</sup>	y-bar =	7.1877 in	S <sub>top</sub> =	106.11 in <sup>3</sup>
I <sub>x</sub> =	689.71 in <sup>4</sup>	S <sub>bott.</sub> =	95.96 in <sup>3</sup>	I <sub>x</sub> =	689.71 in <sup>4</sup>	S <sub>bott.</sub> =	95.96 in <sup>3</sup>
C <sub>top</sub> =	6.4998 in	A =	24.0074 in <sup>2</sup>	C <sub>top</sub> =	6.4998 in	A =	24.0074 in <sup>2</sup>
C <sub>bottom</sub> =	7.1877 in	r <sub>x</sub> =	5.3600 in	C <sub>bottom</sub> =	7.1877 in	r <sub>x</sub> =	5.3600 in
J =	2.9386 in <sup>4</sup>	Z =	119.27 in <sup>3</sup>			Z =	119.27 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		8.5470	4.2400	36.2393	87.7563	1.3100	14.6675	102.4238
	Web		5.9604	4.2400	25.2721	0.1144	1.3100	10.2286	10.3431
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.8000	25.2700	27.0565
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.8000	9.7200	9.7825
2 (Right)	Horizontal Leg		1.7500	6.7300	11.7775	1.7865	1.1800	2.4367	4.2232
	Vertical Leg		3.0000	4.7300	14.1900	0.0625	0.8200	2.0172	2.0797
3	Additional Plate		0.0000	4.2400	0.0000	0.0000	1.3100	0.0000	0.0000
<b>Total</b>			<b>24.01</b>		<b>101.79</b>	<b>91.57</b>		<b>64.34</b>	<b>155.91</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.5500 in	S <sub>right</sub> =	28.09 in <sup>3</sup>	x-bar =	5.5500 in	S <sub>right</sub> =	28.09 in <sup>3</sup>
I <sub>y</sub> =	155.91 in <sup>4</sup>	S <sub>left</sub> =	28.09 in <sup>3</sup>	I <sub>y</sub> =	155.91 in <sup>4</sup>	S <sub>left</sub> =	28.09 in <sup>3</sup>
C <sub>right</sub> =	5.5500 in	A =	24.0074 in <sup>2</sup>	C <sub>right</sub> =	5.5500 in	A =	24.0074 in <sup>2</sup>
C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.5484 in	C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.5484 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	357.81 k-ft	357.81 k-ft
V	239.29 k	239.29 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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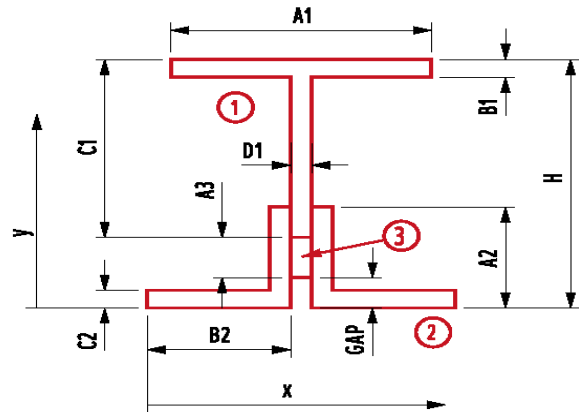
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

Note that this stringer was missing from the shop drawings, therefore the dimensions are estimated

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x86	<b>Bottom Angles:</b>
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.7700 in	$B_2 = L_h =$ 4.0000 in
$C_1 = d =$	12.1250 in	$C_2 = t =$ 0.6250 in
$D_1 = t_w =$	0.4800 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	$H =$ 12.6250 in
$B_3 = t =$	0.4800 in	$Gap =$ 0.5000 in

\*select from dropdown list

**Coped Stringer S4-8 @ FB C3**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	8.5470	12.2400	104.6153	0.4223	5.9364	301.2068	301.6291
	Web	5.4504	6.1775	33.6698	58.5627	0.1261	0.0866	58.6494
2	Horizontal Legs	4.2188	0.3125	1.3184	0.1373	5.9911	151.4231	151.5605
	Vertical Legs	7.5000	3.0000	22.5000	22.5000	3.3036	81.8517	104.3517
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.8036	0.0000	0.0000
<b>Total</b>		<b>25.72</b>		<b>162.10</b>	<b>81.62</b>		<b>534.57</b>	<b>616.19</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.3036	in	S <sub>top</sub> = 97.48 in <sup>3</sup>	y-bar =	6.3036	in	S <sub>top</sub> = 97.48 in <sup>3</sup>
I <sub>x</sub> =	616.19	in <sup>4</sup>	S <sub>bott.</sub> = 97.75 in <sup>3</sup>	I <sub>x</sub> =	616.19	in <sup>4</sup>	S <sub>bott.</sub> = 97.75 in <sup>3</sup>
C <sub>top</sub> =	6.3214	in	A = 25.7162 in <sup>2</sup>	C <sub>top</sub> =	6.3214	in	A = 25.7162 in <sup>2</sup>
C <sub>bottom</sub> =	6.3036	in	r <sub>x</sub> = 4.8950 in	C <sub>bottom</sub> =	6.3036	in	r <sub>x</sub> = 4.8950 in
J =	3.6336	in <sup>4</sup>	Z = 114.01 in <sup>3</sup>	Z =	114.01	in <sup>3</sup>	

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		8.5470	4.2400	36.2393	87.7563	1.3100	14.6675	102.4238
	Web		5.4504	4.2400	23.1097	0.1046	1.3100	9.3534	9.4581
2 (Left)	Horizontal Leg		2.1094	1.6875	3.5596	2.0023	3.8625	31.4696	33.4718
	Vertical Leg		3.7500	3.6875	13.8281	0.1221	1.8625	13.0084	13.1305
2 (Right)	Horizontal Leg		2.1094	6.7925	14.3279	2.0023	1.2425	3.2565	5.2587
	Vertical Leg		3.7500	4.7925	17.9719	0.1221	0.7575	2.1518	2.2738
3	Additional Plate		0.0000	4.2400	0.0000	0.0000	1.3100	0.0000	0.0000
<b>Total</b>			<b>25.72</b>		<b>109.04</b>	<b>92.11</b>		<b>73.91</b>	<b>166.02</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.5500	in	S <sub>right</sub> = 29.91 in <sup>3</sup>	x-bar =	5.5500	in	S <sub>right</sub> = 29.91 in <sup>3</sup>
I <sub>y</sub> =	166.02	n <sup>4</sup>	S <sub>left</sub> = 29.91 in <sup>3</sup>	I <sub>y</sub> =	166.02	n <sup>4</sup>	S <sub>left</sub> = 29.91 in <sup>3</sup>
C <sub>right</sub> =	5.5500	in	A = 25.7162 in <sup>2</sup>	C <sub>right</sub> =	5.5500	in	A = 25.7162 in <sup>2</sup>
C <sub>left</sub> =	5.5500	in	r <sub>y</sub> = 2.5408 in	C <sub>left</sub> =	5.5500	in	r <sub>y</sub> = 2.5408 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	342.03 k-ft	342.03 k-ft
V	254.09 k	254.09 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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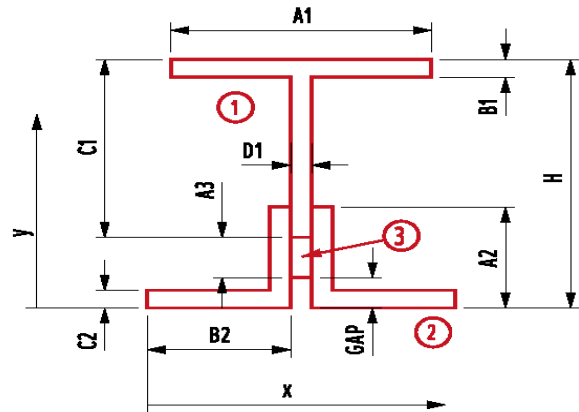
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

Note that this stringer was missing from the shop drawings, therefore the dimensions are estimated

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x86	<b>Bottom Angles:</b>
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.7700 in	$B_2 = L_h =$ 4.0000 in
$C_1 = d =$	10.9375 in	$C_2 = t =$ 0.6250 in
$D_1 = t_w =$	0.4800 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	H = 11.4375 in
$B_3 = t =$	0.4800 in	Gap = 0.5000 in

\*select from dropdown list

**Coped Stringer S4-8 @ FB C4**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	8.5470	11.0525	94.4657	0.4223	5.2649	236.9188	237.3411
	Web	4.8804	5.5838	27.2509	42.0439	0.2038	0.2027	42.2466
2	Horizontal Legs	4.2188	0.3125	1.3184	0.1373	5.4751	126.4627	126.6001
	Vertical Legs	7.5000	3.0000	22.5000	22.5000	2.7876	58.2789	80.7789
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.2876	0.0000	0.0000
<b>Total</b>		<b>25.15</b>		<b>145.54</b>	<b>65.10</b>		<b>421.86</b>	<b>486.97</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	5.7876 in	S <sub>top</sub> =	86.19 in <sup>3</sup>	y-bar =	5.7876 in	S <sub>top</sub> =	86.19 in <sup>3</sup>
I <sub>x</sub> =	486.97 in <sup>4</sup>	S <sub>bottom</sub> =	84.14 in <sup>3</sup>	I <sub>x</sub> =	486.97 in <sup>4</sup>	S <sub>bottom</sub> =	84.14 in <sup>3</sup>
C <sub>top</sub> =	5.6499 in	A =	25.1462 in <sup>2</sup>	C <sub>top</sub> =	5.6499 in	A =	25.1462 in <sup>2</sup>
C <sub>bottom</sub> =	5.7876 in	r <sub>x</sub> =	4.4006 in	C <sub>bottom</sub> =	5.7876 in	r <sub>x</sub> =	4.4006 in
J =	3.5899 in <sup>4</sup>	Z =	100.32 in <sup>3</sup>	Z =	100.32 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		8.5470	4.2400	36.2393	87.7563	1.3100	14.6675	102.4238
	Web		4.8804	4.2400	20.6929	0.0937	1.3100	8.3753	8.4690
2 (Left)	Horizontal Leg		2.1094	1.6875	3.5596	2.0023	3.8625	31.4696	33.4718
	Vertical Leg		3.7500	3.6875	13.8281	0.1221	1.8625	13.0084	13.1305
2 (Right)	Horizontal Leg		2.1094	6.7925	14.3279	2.0023	1.2425	3.2565	5.2587
	Vertical Leg		3.7500	4.7925	17.9719	0.1221	0.7575	2.1518	2.2738
3	Additional Plate		0.0000	4.2400	0.0000	0.0000	1.3100	0.0000	0.0000
<b>Total</b>			<b>25.15</b>		<b>106.62</b>	<b>92.10</b>		<b>72.93</b>	<b>165.03</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.5500 in	S <sub>right</sub> =	29.73 in <sup>3</sup>	x-bar =	5.5500 in	S <sub>right</sub> =	29.73 in <sup>3</sup>
I <sub>y</sub> =	165.03 in <sup>4</sup>	S <sub>left</sub> =	29.73 in <sup>3</sup>	I <sub>y</sub> =	165.03 in <sup>4</sup>	S <sub>left</sub> =	29.73 in <sup>3</sup>
C <sub>right</sub> =	5.5500 in	A =	25.1462 in <sup>2</sup>	C <sub>right</sub> =	5.5500 in	A =	25.1462 in <sup>2</sup>
C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.5618 in	C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.5618 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	300.96 k-ft	300.96 k-ft
V	242.19 k	242.19 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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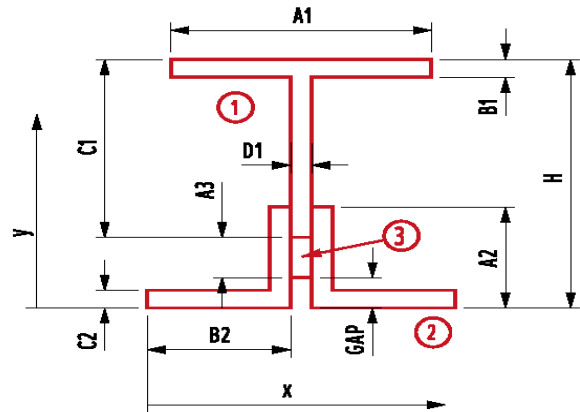
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

Note that this stringer was missing from the shop drawings, therefore the dimensions are estimated

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x86	<b>Bottom Angles:</b>
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.7700 in	$B_2 = L_h =$ 4.0000 in
$C_1 = d =$	9.8125 in	$C_2 = t =$ 0.5000 in
$D_1 = t_w =$	0.4800 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	H = 10.3125 in
$B_3 = t =$	0.4800 in	Gap = 0.5000 in

\*select from dropdown list

**Coped Stringer S4-8 @ FB C5**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	8.5470	9.9275	84.8503	0.4223	4.3208	159.5662	159.9884
	Web	4.3404	5.0213	21.7942	29.5751	0.5855	1.4877	31.0628
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.3567	100.4301	100.5030
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	2.6067	40.7695	58.7695
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.1067	0.0000	0.0000
<b>Total</b>		<b>22.39</b>		<b>125.52</b>	<b>48.07</b>		<b>302.25</b>	<b>350.32</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	5.6067	in	S <sub>top</sub> =	74.45	in <sup>3</sup>	y-bar =	5.6067	in	S <sub>top</sub> =	74.45	in <sup>3</sup>
I <sub>x</sub> =	350.32	in <sup>4</sup>	S <sub>bott.</sub> =	62.48	in <sup>3</sup>	I <sub>x</sub> =	350.32	in <sup>4</sup>	S <sub>bott.</sub> =	62.48	in <sup>3</sup>
C <sub>top</sub> =	4.7058	in	A =	22.3874	in <sup>2</sup>	C <sub>top</sub> =	4.7058	in	A =	22.3874	in <sup>2</sup>
C <sub>bottom</sub> =	5.6067	in	r <sub>x</sub> =	3.9558	in	C <sub>bottom</sub> =	5.6067	in	r <sub>x</sub> =	3.9558	in
J =	2.8142	in <sup>4</sup>	Z =	81.36	in <sup>3</sup>	Z =	81.36	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		8.5470	4.2400	36.2393	87.7563	1.3100	14.6675	102.4238
	Web		4.3404	4.2400	18.4033	0.0833	1.3100	7.4486	7.5319
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.8000	25.2700	27.0565
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.8000	9.7200	9.7825
2 (Right)	Horizontal Leg		1.7500	6.7300	11.7775	1.7865	1.1800	2.4367	4.2232
	Vertical Leg		3.0000	4.7300	14.1900	0.0625	0.8200	2.0172	2.0797
3	Additional Plate		0.0000	4.2400	0.0000	0.0000	1.3100	0.0000	0.0000
<b>Total</b>			<b>22.39</b>		<b>94.92</b>	<b>91.54</b>		<b>61.56</b>	<b>153.10</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.5500	in	S <sub>right</sub> =	27.59	in <sup>3</sup>	x-bar =	5.5500	in	S <sub>right</sub> =	27.59	in <sup>3</sup>
I <sub>y</sub> =	153.10	n <sup>4</sup>	S <sub>left</sub> =	27.59	in <sup>3</sup>	I <sub>y</sub> =	153.10	n <sup>4</sup>	S <sub>left</sub> =	27.59	in <sup>3</sup>
C <sub>right</sub> =	5.5500	in	A =	22.3874	in <sup>2</sup>	C <sub>right</sub> =	5.5500	in	A =	22.3874	in <sup>2</sup>
C <sub>left</sub> =	5.5500	in	r <sub>y</sub> =	2.6151	in	C <sub>left</sub> =	5.5500	in	r <sub>y</sub> =	2.6151	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	244.08 k-ft	244.08 k-ft
V	205.47 k	205.47 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





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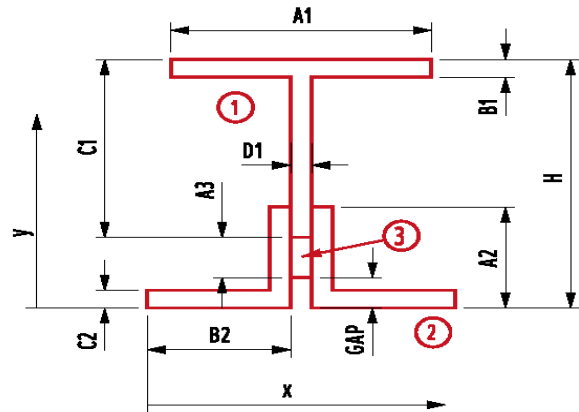
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

Note that this stringer was missing from the shop drawings, therefore the dimensions are estimated

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x86	<b>Bottom Angles:</b>
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.7700 in	$B_2 = L_h =$ 4.0000 in
$C_1 = d =$	13.9375 in	$C_2 = t =$ 0.5000 in
$D_1 = t_w =$	0.4800 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	H = 14.4375 in
$B_3 = t =$	0.4800 in	Gap = 0.5000 in

\*select from dropdown list

**Coped Stringer S5-8 @ FB C2**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	8.5470	14.0525	120.1067	0.4223	6.5115	362.3929	362.8152
	Web	6.3204	7.0838	44.7721	91.3209	0.4572	1.3213	92.6421
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	7.2910	186.0539	186.1268
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.5410	123.7225	141.7225
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	7.0410	0.0000	0.0000
<b>Total</b>		<b>24.37</b>		<b>183.75</b>	<b>109.82</b>		<b>673.49</b>	<b>783.31</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	7.5410 in	S <sub>top</sub> =	113.58 in <sup>3</sup>	y-bar =	7.5410 in	S <sub>top</sub> =	113.58 in <sup>3</sup>
I <sub>x</sub> =	783.31 in <sup>4</sup>	S <sub>bott.</sub> =	103.87 in <sup>3</sup>	I <sub>x</sub> =	783.31 in <sup>4</sup>	S <sub>bott.</sub> =	103.87 in <sup>3</sup>
C <sub>top</sub> =	6.8965 in	A =	24.3674 in <sup>2</sup>	C <sub>top</sub> =	6.8965 in	A =	24.3674 in <sup>2</sup>
C <sub>bottom</sub> =	7.5410 in	r <sub>x</sub> =	5.6697 in	C <sub>bottom</sub> =	7.5410 in	r <sub>x</sub> =	5.6697 in
J =	2.9662 in <sup>4</sup>	Z =	128.32 in <sup>3</sup>	Z =	128.32 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		8.5470	4.2400	36.2393	87.7563	1.3100	14.6675	102.4238
	Web		6.3204	4.2400	26.7985	0.1214	1.3100	10.8464	10.9678
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.8000	25.2700	27.0565
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.8000	9.7200	9.7825
2 (Right)	Horizontal Leg		1.7500	6.7300	11.7775	1.7865	1.1800	2.4367	4.2232
	Vertical Leg		3.0000	4.7300	14.1900	0.0625	0.8200	2.0172	2.0797
3	Additional Plate		0.0000	4.2400	0.0000	0.0000	1.3100	0.0000	0.0000
<b>Total</b>			<b>24.37</b>		<b>103.32</b>	<b>91.58</b>		<b>64.96</b>	<b>156.53</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.5500 in	S <sub>right</sub> =	28.20 in <sup>3</sup>	x-bar =	5.5500 in	S <sub>right</sub> =	28.20 in <sup>3</sup>
I <sub>y</sub> =	156.53 in <sup>4</sup>	S <sub>left</sub> =	28.20 in <sup>3</sup>	I <sub>y</sub> =	156.53 in <sup>4</sup>	S <sub>left</sub> =	28.20 in <sup>3</sup>
C <sub>right</sub> =	5.5500 in	A =	24.3674 in <sup>2</sup>	C <sub>right</sub> =	5.5500 in	A =	24.3674 in <sup>2</sup>
C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.5345 in	C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.5345 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	384.96 k-ft	384.96 k-ft
V	246.81 k	246.81 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/14/2012  
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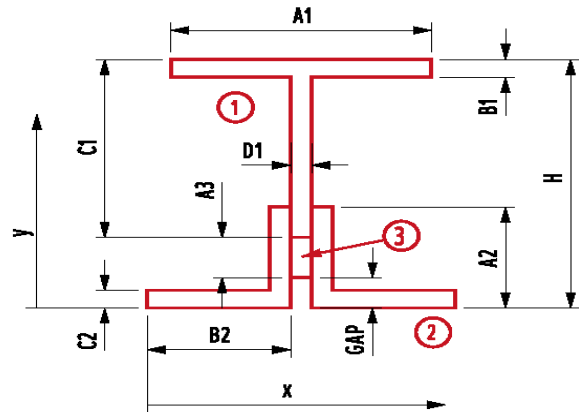
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

Note that this stringer was missing from the shop drawings, therefore the dimensions are estimated

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x86	<b>Bottom Angles:</b>	
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7700 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	12.5000 in	$C_2 = t =$	0.6250 in
$D_1 = t_w =$	0.4800 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	13.0000 in
$B_3 = t =$	0.4800 in	$Gap =$	0.5000 in

\*select from dropdown list

**Coped Stringer S5-8 @ FB C3**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	8.5470	12.6150	107.8204	0.4223	6.1478	323.0349	323.4572
	Web	5.6304	6.3650	35.8375	64.5586	0.1022	0.0588	64.6174
2	Horizontal Legs	4.2188	0.3125	1.3184	0.1373	6.1547	159.8090	159.9463
	Vertical Legs	7.5000	3.0000	22.5000	22.5000	3.4672	90.1624	112.6624
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.9672	0.0000	0.0000
<b>Total</b>		<b>25.90</b>		<b>167.48</b>	<b>87.62</b>		<b>573.07</b>	<b>660.68</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.4672 in	S <sub>top</sub> =	101.13 in <sup>3</sup>	y-bar =	6.4672 in	S <sub>top</sub> =	101.13 in <sup>3</sup>
I <sub>x</sub> =	660.68 in <sup>4</sup>	S <sub>bott.</sub> =	102.16 in <sup>3</sup>	I <sub>x</sub> =	660.68 in <sup>4</sup>	S <sub>bott.</sub> =	102.16 in <sup>3</sup>
C <sub>top</sub> =	6.5328 in	A =	25.8962 in <sup>2</sup>	C <sub>top</sub> =	6.5328 in	A =	25.8962 in <sup>2</sup>
C <sub>bottom</sub> =	6.4672 in	r <sub>x</sub> =	5.0510 in	C <sub>bottom</sub> =	6.4672 in	r <sub>x</sub> =	5.0510 in
J =	3.6475 in <sup>4</sup>	Z =	118.46 in <sup>3</sup>			Z =	118.46 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		8.5470	4.2400	36.2393	87.7563	1.3100	14.6675	102.4238
	Web		5.6304	4.2400	23.8729	0.1081	1.3100	9.6623	9.7704
2 (Left)	Horizontal Leg		2.1094	1.6875	3.5596	2.0023	3.8625	31.4696	33.4718
	Vertical Leg		3.7500	3.6875	13.8281	0.1221	1.8625	13.0084	13.1305
2 (Right)	Horizontal Leg		2.1094	6.7925	14.3279	2.0023	1.2425	3.2565	5.2587
	Vertical Leg		3.7500	4.7925	17.9719	0.1221	0.7575	2.1518	2.2738
3	Additional Plate		0.0000	4.2400	0.0000	0.0000	1.3100	0.0000	0.0000
<b>Total</b>			<b>25.90</b>		<b>109.80</b>	<b>92.11</b>		<b>74.22</b>	<b>166.33</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.5500 in	S <sub>right</sub> =	29.97 in <sup>3</sup>	x-bar =	5.5500 in	S <sub>right</sub> =	29.97 in <sup>3</sup>
I <sub>y</sub> =	166.33 in <sup>4</sup>	S <sub>left</sub> =	29.97 in <sup>3</sup>	I <sub>y</sub> =	166.33 in <sup>4</sup>	S <sub>left</sub> =	29.97 in <sup>3</sup>
C <sub>right</sub> =	5.5500 in	A =	25.8962 in <sup>2</sup>	C <sub>right</sub> =	5.5500 in	A =	25.8962 in <sup>2</sup>
C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.5343 in	C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.5343 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
<b>M</b>	355.38 k-ft	355.38 k-ft
<b>V</b>	257.85 k	257.85 k

<b>F<sub>y</sub> =</b>	<b>36.00 ksi</b>
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\*Compact Section



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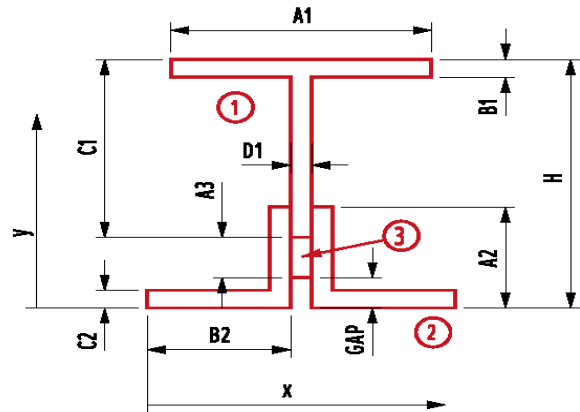
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

Note that this stringer was missing from the shop drawings, therefore the dimensions are estimated

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x86	<b>Bottom Angles:</b>
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.7700 in	$B_2 = L_h =$ 4.0000 in
$C_1 = d =$	11.3125 in	$C_2 = t =$ 0.6250 in
$D_1 = t_w =$	0.4800 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	$H =$ 11.8125 in
$B_3 = t =$	0.4800 in	$Gap =$ 0.5000 in

\*select from dropdown list

**Coped Stringer S5-8 @ FB C4**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	8.5470	11.4275	97.6708	0.4223	5.4774	256.4230	256.8453
	Web	5.0604	5.7713	29.2048	46.8696	0.1789	0.1619	47.0315
2	Horizontal Legs	4.2188	0.3125	1.3184	0.1373	5.6376	134.0843	134.2216
	Vertical Legs	7.5000	3.0000	22.5000	22.5000	2.9501	65.2748	87.7748
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.4501	0.0000	0.0000
<b>Total</b>		<b>25.33</b>		<b>150.69</b>	<b>69.93</b>		<b>455.94</b>	<b>525.87</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	5.9501 in	S <sub>top</sub> =	89.70 in <sup>3</sup>	y-bar =	5.9501 in	S <sub>top</sub> =	89.70 in <sup>3</sup>
I <sub>x</sub> =	525.87 in <sup>4</sup>	S <sub>bott.</sub> =	88.38 in <sup>3</sup>	I <sub>x</sub> =	525.87 in <sup>4</sup>	S <sub>bott.</sub> =	88.38 in <sup>3</sup>
C <sub>top</sub> =	5.8624 in	A =	25.3262 in <sup>2</sup>	C <sub>top</sub> =	5.8624 in	A =	25.3262 in <sup>2</sup>
C <sub>bottom</sub> =	5.9501 in	r <sub>x</sub> =	4.5568 in	C <sub>bottom</sub> =	5.9501 in	r <sub>x</sub> =	4.5568 in
J =	3.6037 in <sup>4</sup>	Z =	104.58 in <sup>3</sup>	Z =	104.58 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		8.5470	4.2400	36.2393	87.7563	1.3100	14.6675	102.4238
	Web		5.0604	4.2400	21.4561	0.0972	1.3100	8.6842	8.7813
2 (Left)	Horizontal Leg		2.1094	1.6875	3.5596	2.0023	3.8625	31.4696	33.4718
	Vertical Leg		3.7500	3.6875	13.8281	0.1221	1.8625	13.0084	13.1305
2 (Right)	Horizontal Leg		2.1094	6.7925	14.3279	2.0023	1.2425	3.2565	5.2587
	Vertical Leg		3.7500	4.7925	17.9719	0.1221	0.7575	2.1518	2.2738
3	Additional Plate		0.0000	4.2400	0.0000	0.0000	1.3100	0.0000	0.0000
<b>Total</b>			<b>25.33</b>		<b>107.38</b>	<b>92.10</b>		<b>73.24</b>	<b>165.34</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.5500 in	S <sub>right</sub> =	29.79 in <sup>3</sup>	x-bar =	5.5500 in	S <sub>right</sub> =	29.79 in <sup>3</sup>
I <sub>y</sub> =	165.34 in <sup>4</sup>	S <sub>left</sub> =	29.79 in <sup>3</sup>	I <sub>y</sub> =	165.34 in <sup>4</sup>	S <sub>left</sub> =	29.79 in <sup>3</sup>
C <sub>right</sub> =	5.5500 in	A =	25.3262 in <sup>2</sup>	C <sub>right</sub> =	5.5500 in	A =	25.3262 in <sup>2</sup>
C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.5551 in	C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.5551 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	313.74 k-ft	313.74 k-ft
V	245.95 k	245.95 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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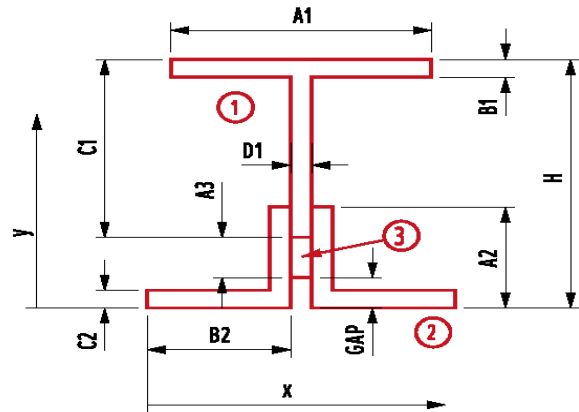
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

Note that this stringer was missing from the shop drawings, therefore the dimensions are estimated

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x86	<b>Bottom Angles:</b>	
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7700 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	10.3125 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.4800 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	10.8125 in
$B_3 = t =$	0.4800 in	$Gap =$	0.5000 in

\*select from dropdown list

**Coped Stringer S5-8 @ FB C5**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		8.5470	10.4275	89.1238	0.4223	4.5875	179.8755	180.2978
	Web		4.5804	5.2713	24.1444	34.7573	0.5687	1.4815	36.2388
2	Horizontal Legs		3.5000	0.2500	0.8750	0.0729	5.5900	109.3671	109.4400
	Vertical Legs		6.0000	3.0000	18.0000	18.0000	2.8400	48.3925	66.3925
3	Additional Plate		0.0000	0.5000	0.0000	0.0000	5.3400	0.0000	0.0000
<b>Total</b>			<b>22.63</b>		<b>132.14</b>	<b>53.25</b>		<b>339.12</b>	<b>392.37</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	5.8400 in	S <sub>top</sub> =	78.91 in <sup>3</sup>	y-bar =	5.8400 in	S <sub>top</sub> =	78.91 in <sup>3</sup>
I <sub>x</sub> =	392.37 in <sup>4</sup>	S <sub>bott.</sub> =	67.19 in <sup>3</sup>	I <sub>x</sub> =	392.37 in <sup>4</sup>	S <sub>bott.</sub> =	67.19 in <sup>3</sup>
C <sub>top</sub> =	4.9725 in	A =	22.6274 in <sup>2</sup>	C <sub>top</sub> =	4.9725 in	A =	22.6274 in <sup>2</sup>
C <sub>bottom</sub> =	5.8400 in	r <sub>x</sub> =	4.1642 in	C <sub>bottom</sub> =	5.8400 in	r <sub>x</sub> =	4.1642 in
J =	2.8326 in <sup>4</sup>	Z =	86.69 in <sup>3</sup>	Z =	86.69 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		8.5470	4.2400	36.2393	87.7563	1.3100	14.6675	102.4238
	Web		4.5804	4.2400	19.4209	0.0879	1.3100	7.8604	7.9484
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.8000	25.2700	27.0565
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.8000	9.7200	9.7825
2 (Right)	Horizontal Leg		1.7500	6.7300	11.7775	1.7865	1.1800	2.4367	4.2232
	Vertical Leg		3.0000	4.7300	14.1900	0.0625	0.8200	2.0172	2.0797
3	Additional Plate		0.0000	4.2400	0.0000	0.0000	1.3100	0.0000	0.0000
<b>Total</b>			<b>22.63</b>		<b>95.94</b>	<b>91.54</b>		<b>61.97</b>	<b>153.51</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.5500 in	S <sub>right</sub> =	27.66 in <sup>3</sup>	x-bar =	5.5500 in	S <sub>right</sub> =	27.66 in <sup>3</sup>
I <sub>y</sub> =	153.51 in <sup>4</sup>	S <sub>left</sub> =	27.66 in <sup>3</sup>	I <sub>y</sub> =	153.51 in <sup>4</sup>	S <sub>left</sub> =	27.66 in <sup>3</sup>
C <sub>right</sub> =	5.5500 in	A =	22.6274 in <sup>2</sup>	C <sub>right</sub> =	5.5500 in	A =	22.6274 in <sup>2</sup>
C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.6047 in	C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.6047 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	260.07 k-ft	260.07 k-ft
V	210.48 k	210.48 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





Made By CTG  
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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x86	<b>Bottom Angles:</b>
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.7700 in	$B_2 = L_h =$ 4.0000 in
$C_1 = d =$	14.2500 in	$C_2 = t =$ 0.5000 in
$D_1 = t_w =$	0.4800 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	H = 14.7500 in
$B_3 = t =$	0.4800 in	Gap = 0.5000 in

\*select from dropdown list

**Coped Stringer S6-8 @ FB C2**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	8.5470	14.3650	122.7777	0.4223	6.6767	381.0052	381.4275
	Web	6.4704	7.2400	46.8457	97.9782	0.4483	1.3007	99.2789
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	7.4383	193.6517	193.7246
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.6883	131.8838	149.8838
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	7.1883	0.0000	0.0000
<b>Total</b>		<b>24.52</b>		<b>188.50</b>	<b>116.47</b>		<b>707.84</b>	<b>824.31</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	7.6883	in	S <sub>top</sub> =	116.73	in <sup>3</sup>	y-bar =	7.6883	in	S <sub>top</sub> =	116.73	in <sup>3</sup>
I <sub>x</sub> =	824.31	in <sup>4</sup>	S <sub>bottom</sub> =	107.22	in <sup>3</sup>	I <sub>x</sub> =	824.31	in <sup>4</sup>	S <sub>bottom</sub> =	107.22	in <sup>3</sup>
C <sub>top</sub> =	7.0617	in	A =	24.5174	in <sup>2</sup>	C <sub>top</sub> =	7.0617	in	A =	24.5174	in <sup>2</sup>
C <sub>bottom</sub> =	7.6883	in	r <sub>x</sub> =	5.7984	in	C <sub>bottom</sub> =	7.6883	in	r <sub>x</sub> =	5.7984	in
J =	2.9778	in <sup>4</sup>	Z =	132.13	in <sup>3</sup>	Z =	132.13	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		8.5470	4.2400	36.2393	87.7563	1.3100	14.6675	102.4238
	Web		6.4704	4.2400	27.4345	0.1242	1.3100	11.1039	11.2281
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.8000	25.2700	27.0565
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.8000	9.7200	9.7825
2 (Right)	Horizontal Leg		1.7500	6.7300	11.7775	1.7865	1.1800	2.4367	4.2232
	Vertical Leg		3.0000	4.7300	14.1900	0.0625	0.8200	2.0172	2.0797
3	Additional Plate		0.0000	4.2400	0.0000	0.0000	1.3100	0.0000	0.0000
<b>Total</b>			<b>24.52</b>		<b>103.95</b>	<b>91.58</b>		<b>65.22</b>	<b>156.79</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.5500	in	S <sub>right</sub> =	28.25	in <sup>3</sup>	x-bar =	5.5500	in	S <sub>right</sub> =	28.25	in <sup>3</sup>
I <sub>y</sub> =	156.79	in <sup>4</sup>	S <sub>left</sub> =	28.25	in <sup>3</sup>	I <sub>y</sub> =	156.79	in <sup>4</sup>	S <sub>left</sub> =	28.25	in <sup>3</sup>
C <sub>right</sub> =	5.5500	in	A =	24.5174	in <sup>2</sup>	C <sub>right</sub> =	5.5500	in	A =	24.5174	in <sup>2</sup>
C <sub>left</sub> =	5.5500	in	r <sub>y</sub> =	2.5289	in	C <sub>left</sub> =	5.5500	in	r <sub>y</sub> =	2.5289	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	396.39 k-ft	396.39 k-ft
V	249.94 k	249.94 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x86	<b>Bottom Angles:</b>
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.7700 in	$B_2 = L_h =$ 4.0000 in
$C_1 = d =$	13.1250 in	$C_2 = t =$ 0.6250 in
$D_1 = t_w =$	0.4800 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	$H =$ 13.6250 in
$B_3 = t =$	0.4800 in	$Gap =$ 0.5000 in

\*select from dropdown list

**Coped Stringer S6-8 @ FB C3**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	8.5470	13.2400	113.1623	0.4223	6.4993	361.0309	361.4532
	Web	5.9304	6.6775	39.6002	75.4377	0.0632	0.0237	75.4614
2	Horizontal Legs	4.2188	0.3125	1.3184	0.1373	6.4282	174.3272	174.4645
	Vertical Legs	7.5000	3.0000	22.5000	22.5000	3.7407	104.9473	127.4473
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.2407	0.0000	0.0000
<b>Total</b>		<b>26.20</b>		<b>176.58</b>	<b>98.50</b>		<b>640.33</b>	<b>738.83</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.7407 in	S <sub>top</sub> =	107.32 in <sup>3</sup>	y-bar =	6.7407 in	S <sub>top</sub> =	107.32 in <sup>3</sup>
I <sub>x</sub> =	738.83 in <sup>4</sup>	S <sub>bott.</sub> =	109.61 in <sup>3</sup>	I <sub>x</sub> =	738.83 in <sup>4</sup>	S <sub>bott.</sub> =	109.61 in <sup>3</sup>
C <sub>top</sub> =	6.8843 in	A =	26.1962 in <sup>2</sup>	C <sub>top</sub> =	6.8843 in	A =	26.1962 in <sup>2</sup>
C <sub>bottom</sub> =	6.7407 in	r <sub>x</sub> =	5.3107 in	C <sub>bottom</sub> =	6.7407 in	r <sub>x</sub> =	5.3107 in
J =	3.6705 in <sup>4</sup>	Z =	125.99 in <sup>3</sup>	Z =	125.99 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		8.5470	4.2400	36.2393	87.7563	1.3100	14.6675	102.4238
	Web		5.9304	4.2400	25.1449	0.1139	1.3100	10.1772	10.2910
2 (Left)	Horizontal Leg		2.1094	1.6875	3.5596	2.0023	3.8625	31.4696	33.4718
	Vertical Leg		3.7500	3.6875	13.8281	0.1221	1.8625	13.0084	13.1305
2 (Right)	Horizontal Leg		2.1094	6.7925	14.3279	2.0023	1.2425	3.2565	5.2587
	Vertical Leg		3.7500	4.7925	17.9719	0.1221	0.7575	2.1518	2.2738
3	Additional Plate		0.0000	4.2400	0.0000	0.0000	1.3100	0.0000	0.0000
<b>Total</b>			<b>26.20</b>		<b>111.07</b>	<b>92.12</b>		<b>74.73</b>	<b>166.85</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.5500 in	S <sub>right</sub> =	30.06 in <sup>3</sup>	x-bar =	5.5500 in	S <sub>right</sub> =	30.06 in <sup>3</sup>
I <sub>y</sub> =	166.85 in <sup>4</sup>	S <sub>left</sub> =	30.06 in <sup>3</sup>	I <sub>y</sub> =	166.85 in <sup>4</sup>	S <sub>left</sub> =	30.06 in <sup>3</sup>
C <sub>right</sub> =	5.5500 in	A =	26.1962 in <sup>2</sup>	C <sub>right</sub> =	5.5500 in	A =	26.1962 in <sup>2</sup>
C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.5237 in	C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.5237 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	377.97 k-ft	377.97 k-ft
V	264.11 k	264.11 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x86	<b>Bottom Angles:</b>	
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7700 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	12.0000 in	$C_2 = t =$	0.6250 in
$D_1 = t_w =$	0.4800 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	12.5000 in
$B_3 = t =$	0.4800 in	$Gap =$	0.5000 in

\*select from dropdown list

**Coped Stringer S6-8 @ FB C4**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		8.5470	12.1150	103.5469	0.4223	5.8659	294.0930	294.5153
	Web		5.3904	6.1150	32.9623	56.6499	0.1341	0.0969	56.7468
2	Horizontal Legs		4.2188	0.3125	1.3184	0.1373	5.9366	148.6818	148.8191
	Vertical Legs		7.5000	3.0000	22.5000	22.5000	3.2491	79.1743	101.6743
3	Additional Plate		0.0000	0.5000	0.0000	0.0000	5.7491	0.0000	0.0000
<b>Total</b>			<b>25.66</b>		<b>160.33</b>	<b>79.71</b>		<b>522.05</b>	<b>601.76</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.2491 in	S <sub>top</sub> =	96.27 in <sup>3</sup>	y-bar =	6.2491 in	S <sub>top</sub> =	96.27 in <sup>3</sup>
I <sub>x</sub> =	601.76 in <sup>4</sup>	S <sub>bott.</sub> =	96.29 in <sup>3</sup>	I <sub>x</sub> =	601.76 in <sup>4</sup>	S <sub>bott.</sub> =	96.29 in <sup>3</sup>
C <sub>top</sub> =	6.2509 in	A =	25.6562 in <sup>2</sup>	C <sub>top</sub> =	6.2509 in	A =	25.6562 in <sup>2</sup>
C <sub>bottom</sub> =	6.2491 in	r <sub>x</sub> =	4.8430 in	C <sub>bottom</sub> =	6.2491 in	r <sub>x</sub> =	4.8430 in
J =	3.6290 in <sup>4</sup>	Z =	112.54 in <sup>3</sup>	Z =	112.54 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	8.5470	4.2400	36.2393	87.7563	1.3100	14.6675	102.4238
	Web	5.3904	4.2400	22.8553	0.1035	1.3100	9.2505	9.3540
2 (Left)	Horizontal Leg	2.1094	1.6875	3.5596	2.0023	3.8625	31.4696	33.4718
	Vertical Leg	3.7500	3.6875	13.8281	0.1221	1.8625	13.0084	13.1305
2 (Right)	Horizontal Leg	2.1094	6.7925	14.3279	2.0023	1.2425	3.2565	5.2587
	Vertical Leg	3.7500	4.7925	17.9719	0.1221	0.7575	2.1518	2.2738
3	Additional Plate	0.0000	4.2400	0.0000	0.0000	1.3100	0.0000	0.0000
<b>Total</b>		<b>25.66</b>		<b>108.78</b>	<b>92.11</b>		<b>73.80</b>	<b>165.91</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.5500 in	S <sub>right</sub> =	29.89 in <sup>3</sup>	x-bar =	5.5500 in	S <sub>right</sub> =	29.89 in <sup>3</sup>
I <sub>y</sub> =	165.91 in <sup>4</sup>	S <sub>left</sub> =	29.89 in <sup>3</sup>	I <sub>y</sub> =	165.91 in <sup>4</sup>	S <sub>left</sub> =	29.89 in <sup>3</sup>
C <sub>right</sub> =	5.5500 in	A =	25.6562 in <sup>2</sup>	C <sub>right</sub> =	5.5500 in	A =	25.6562 in <sup>2</sup>
C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.5430 in	C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.5430 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	337.62 k-ft	337.62 k-ft
V	252.84 k	252.84 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x86	<b>Bottom Angles:</b>	
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7700 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	10.7500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.4800 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	11.2500 in
$B_3 = t =$	0.4800 in	$Gap =$	0.5000 in

\*select from dropdown list

**Coped Stringer S6-8 @ FB C5**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	8.5470	10.8650	92.8632	0.4223	4.8206	198.6201	199.0424
	Web	4.7904	5.4900	26.2993	39.7605	0.5544	1.4722	41.2326
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.7944	117.5111	117.5840
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.0444	55.6087	73.6087
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.5444	0.0000	0.0000
<b>Total</b>		<b>22.84</b>		<b>138.04</b>	<b>58.26</b>		<b>373.21</b>	<b>431.47</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.0444 in	S <sub>top</sub> =	82.88 in <sup>3</sup>	y-bar =	6.0444 in	S <sub>top</sub> =	82.88 in <sup>3</sup>
I <sub>x</sub> =	431.47 in <sup>4</sup>	S <sub>bottom</sub> =	71.38 in <sup>3</sup>	I <sub>x</sub> =	431.47 in <sup>4</sup>	S <sub>bottom</sub> =	71.38 in <sup>3</sup>
C <sub>top</sub> =	5.2056 in	A =	22.8374 in <sup>2</sup>	C <sub>top</sub> =	5.2056 in	A =	22.8374 in <sup>2</sup>
C <sub>bottom</sub> =	6.0444 in	r <sub>x</sub> =	4.3466 in	C <sub>bottom</sub> =	6.0444 in	r <sub>x</sub> =	4.3466 in
J =	2.8487 in <sup>4</sup>	Z =	91.43 in <sup>3</sup>	Z =	91.43 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		8.5470	4.2400	36.2393	87.7563	1.3100	14.6675	102.4238
	Web		4.7904	4.2400	20.3113	0.0920	1.3100	8.2208	8.3128
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.8000	25.2700	27.0565
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.8000	9.7200	9.7825
2 (Right)	Horizontal Leg		1.7500	6.7300	11.7775	1.7865	1.1800	2.4367	4.2232
	Vertical Leg		3.0000	4.7300	14.1900	0.0625	0.8200	2.0172	2.0797
3	Additional Plate		0.0000	4.2400	0.0000	0.0000	1.3100	0.0000	0.0000
<b>Total</b>			<b>22.84</b>		<b>96.83</b>	<b>91.55</b>		<b>62.33</b>	<b>153.88</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.5500 in	S <sub>right</sub> =	27.73 in <sup>3</sup>	x-bar =	5.5500 in	S <sub>right</sub> =	27.73 in <sup>3</sup>
I <sub>y</sub> =	153.88 in <sup>4</sup>	S <sub>left</sub> =	27.73 in <sup>3</sup>	I <sub>y</sub> =	153.88 in <sup>4</sup>	S <sub>left</sub> =	27.73 in <sup>3</sup>
C <sub>right</sub> =	5.5500 in	A =	22.8374 in <sup>2</sup>	C <sub>right</sub> =	5.5500 in	A =	22.8374 in <sup>2</sup>
C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.5958 in	C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.5958 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	274.29 k-ft	274.29 k-ft
V	214.86 k	214.86 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section





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Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x86	<b>Bottom Angles:</b>	
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7700 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	15.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.4800 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	16.0000 in
$B_3 = t =$	0.4800 in	$Gap =$	0.5000 in

\*select from dropdown list

**Coped Stringer S7-8 @ FB C2**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	8.5470	15.6150	133.4614	0.4223	7.3361	459.9823	460.4046
	Web	7.0704	7.8650	55.6087	127.8404	0.4139	1.2114	129.0518
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	8.0289	225.6228	225.6957
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	5.2789	167.2024	185.2024
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	7.7789	0.0000	0.0000
<b>Total</b>		<b>25.12</b>		<b>207.95</b>	<b>146.34</b>		<b>854.02</b>	<b>1000.35</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	8.2789 in	S <sub>top</sub> =	129.56 in <sup>3</sup>	y-bar =	8.2789 in	S <sub>top</sub> =	129.56 in <sup>3</sup>
I <sub>x</sub> =	1000.35 in <sup>4</sup>	S <sub>bott.</sub> =	120.83 in <sup>3</sup>	I <sub>x</sub> =	1000.35 in <sup>4</sup>	S <sub>bott.</sub> =	120.83 in <sup>3</sup>
C <sub>top</sub> =	7.7211 in	A =	25.1174 in <sup>2</sup>	C <sub>top</sub> =	7.7211 in	A =	25.1174 in <sup>2</sup>
C <sub>bottom</sub> =	8.2789 in	r <sub>x</sub> =	6.3109 in	C <sub>bottom</sub> =	8.2789 in	r <sub>x</sub> =	6.3109 in
J =	3.0238 in <sup>4</sup>	Z =	147.65 in <sup>3</sup>			Z =	147.65 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		8.5470	4.2400	36.2393	87.7563	1.3100	14.6675	102.4238
	Web		7.0704	4.2400	29.9785	0.1358	1.3100	12.1335	12.2693
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.8000	25.2700	27.0565
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.8000	9.7200	9.7825
2 (Right)	Horizontal Leg		1.7500	6.7300	11.7775	1.7865	1.1800	2.4367	4.2232
	Vertical Leg		3.0000	4.7300	14.1900	0.0625	0.8200	2.0172	2.0797
3	Additional Plate		0.0000	4.2400	0.0000	0.0000	1.3100	0.0000	0.0000
<b>Total</b>			<b>25.12</b>		<b>106.50</b>	<b>91.59</b>		<b>66.24</b>	<b>157.83</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.5500 in	S <sub>right</sub> =	28.44 in <sup>3</sup>	x-bar =	5.5500 in	S <sub>right</sub> =	28.44 in <sup>3</sup>
I <sub>y</sub> =	157.83 in <sup>4</sup>	S <sub>left</sub> =	28.44 in <sup>3</sup>	I <sub>y</sub> =	157.83 in <sup>4</sup>	S <sub>left</sub> =	28.44 in <sup>3</sup>
C <sub>right</sub> =	5.5500 in	A =	25.1174 in <sup>2</sup>	C <sub>right</sub> =	5.5500 in	A =	25.1174 in <sup>2</sup>
C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.5068 in	C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.5068 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	442.95 k-ft	442.95 k-ft
V	262.47 k	262.47 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x86	<b>Bottom Angles:</b>
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.7700 in	$B_2 = L_h =$ 4.0000 in
$C_1 = d =$	13.8750 in	$C_2 = t =$ 0.6250 in
$D_1 = t_w =$	0.4800 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	$H =$ 14.3750 in
$B_3 = t =$	0.4800 in	$Gap =$ 0.5000 in

\*select from dropdown list

**Coped Stringer S7-8 @ FB C3**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	8.5470	13.9900	119.5725	0.4223	6.9199	409.2764	409.6986
	Web	6.2904	7.0525	44.3630	90.0266	0.0176	0.0019	90.0286
2	Horizontal Legs	4.2188	0.3125	1.3184	0.1373	6.7576	192.6484	192.7857
	Vertical Legs	7.5000	3.0000	22.5000	22.5000	4.0701	124.2412	146.7412
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.5701	0.0000	0.0000
<b>Total</b>		<b>26.56</b>		<b>187.75</b>	<b>113.09</b>		<b>726.17</b>	<b>839.25</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	7.0701 in	S <sub>top</sub> =	114.89 in <sup>3</sup>	y-bar =	7.0701 in	S <sub>top</sub> =	114.89 in <sup>3</sup>
I <sub>x</sub> =	839.25 in <sup>4</sup>	S <sub>bottom</sub> =	118.71 in <sup>3</sup>	I <sub>x</sub> =	839.25 in <sup>4</sup>	S <sub>bottom</sub> =	118.71 in <sup>3</sup>
C <sub>top</sub> =	7.3049 in	A =	26.5562 in <sup>2</sup>	C <sub>top</sub> =	7.3049 in	A =	26.5562 in <sup>2</sup>
C <sub>bottom</sub> =	7.0701 in	r <sub>x</sub> =	5.6217 in	C <sub>bottom</sub> =	7.0701 in	r <sub>x</sub> =	5.6217 in
J =	3.6982 in <sup>4</sup>	Z =	135.25 in <sup>3</sup>	Z =	135.25 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		8.5470	4.2400	36.2393	87.7563	1.3100	14.6675	102.4238
	Web		6.2904	4.2400	26.6713	0.1208	1.3100	10.7950	10.9157
2 (Left)	Horizontal Leg		2.1094	1.6875	3.5596	2.0023	3.8625	31.4696	33.4718
	Vertical Leg		3.7500	3.6875	13.8281	0.1221	1.8625	13.0084	13.1305
2 (Right)	Horizontal Leg		2.1094	6.7925	14.3279	2.0023	1.2425	3.2565	5.2587
	Vertical Leg		3.7500	4.7925	17.9719	0.1221	0.7575	2.1518	2.2738
3	Additional Plate		0.0000	4.2400	0.0000	0.0000	1.3100	0.0000	0.0000
<b>Total</b>			<b>26.56</b>		<b>112.60</b>	<b>92.13</b>		<b>75.35</b>	<b>167.47</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.5500 in	S <sub>right</sub> =	30.18 in <sup>3</sup>	x-bar =	5.5500 in	S <sub>right</sub> =	30.18 in <sup>3</sup>
I <sub>y</sub> =	167.47 in <sup>4</sup>	S <sub>left</sub> =	30.18 in <sup>3</sup>	I <sub>y</sub> =	167.47 in <sup>4</sup>	S <sub>left</sub> =	30.18 in <sup>3</sup>
C <sub>right</sub> =	5.5500 in	A =	26.5562 in <sup>2</sup>	C <sub>right</sub> =	5.5500 in	A =	26.5562 in <sup>2</sup>
C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.5113 in	C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.5113 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	405.75 k-ft	405.75 k-ft
V	271.63 k	271.63 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x86	<b>Bottom Angles:</b>
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.7700 in	$B_2 = L_h =$ 4.0000 in
$C_1 = d =$	12.7500 in	$C_2 = t =$ 0.6250 in
$D_1 = t_w =$	0.4800 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	$H =$ 13.2500 in
$B_3 = t =$	0.4800 in	$Gap =$ 0.5000 in

\*select from dropdown list

Coped Stringer S7-8 @ FB C4

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	8.5470	12.8650	109.9572	0.4223	6.2885	337.9914	338.4137
	Web	5.7504	6.4900	37.3201	68.7750	0.0865	0.0430	68.8180
2	Horizontal Legs	4.2188	0.3125	1.3184	0.1373	6.2640	165.5348	165.6722
	Vertical Legs	7.5000	3.0000	22.5000	22.5000	3.5765	95.9360	118.4360
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.0765	0.0000	0.0000
<b>Total</b>		<b>26.02</b>		<b>171.10</b>	<b>91.83</b>		<b>599.51</b>	<b>691.34</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.5765 in	S <sub>top</sub> =	103.60 in <sup>3</sup>	y-bar =	6.5765 in	S <sub>top</sub> =	103.60 in <sup>3</sup>
I <sub>x</sub> =	691.34 in <sup>4</sup>	S <sub>bott.</sub> =	105.12 in <sup>3</sup>	I <sub>x</sub> =	691.34 in <sup>4</sup>	S <sub>bott.</sub> =	105.12 in <sup>3</sup>
C <sub>top</sub> =	6.6735 in	A =	26.0162 in <sup>2</sup>	C <sub>top</sub> =	6.6735 in	A =	26.0162 in <sup>2</sup>
C <sub>bottom</sub> =	6.5765 in	r <sub>x</sub> =	5.1549 in	C <sub>bottom</sub> =	6.5765 in	r <sub>x</sub> =	5.1549 in
J =	3.6567 in <sup>4</sup>	Z =	121.45 in <sup>3</sup>	Z =	121.45 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		8.5470	4.2400	36.2393	87.7563	1.3100	14.6675	102.4238
	Web		5.7504	4.2400	24.3817	0.1104	1.3100	9.8683	9.9787
2 (Left)	Horizontal Leg		2.1094	1.6875	3.5596	2.0023	3.8625	31.4696	33.4718
	Vertical Leg		3.7500	3.6875	13.8281	0.1221	1.8625	13.0084	13.1305
2 (Right)	Horizontal Leg		2.1094	6.7925	14.3279	2.0023	1.2425	3.2565	5.2587
	Vertical Leg		3.7500	4.7925	17.9719	0.1221	0.7575	2.1518	2.2738
3	Additional Plate		0.0000	4.2400	0.0000	0.0000	1.3100	0.0000	0.0000
<b>Total</b>			<b>26.02</b>		<b>110.31</b>	<b>92.12</b>		<b>74.42</b>	<b>166.54</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.5500 in	S <sub>right</sub> =	30.01 in <sup>3</sup>	x-bar =	5.5500 in	S <sub>right</sub> =	30.01 in <sup>3</sup>
I <sub>y</sub> =	166.54 in <sup>4</sup>	S <sub>left</sub> =	30.01 in <sup>3</sup>	I <sub>y</sub> =	166.54 in <sup>4</sup>	S <sub>left</sub> =	30.01 in <sup>3</sup>
C <sub>right</sub> =	5.5500 in	A =	26.0162 in <sup>2</sup>	C <sub>right</sub> =	5.5500 in	A =	26.0162 in <sup>2</sup>
C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.5301 in	C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.5301 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	364.35 k-ft	364.35 k-ft
V	260.36 k	260.36 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x86	<b>Bottom Angles:</b>	
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7700 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	11.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.4800 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	12.0000 in
$B_3 = t =$	0.4800 in	$Gap =$	0.5000 in

\*select from dropdown list

**Coped Stringer S7-8 @ FB C5**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		8.5470	11.6150	99.2734	0.4223	5.2196	232.8608	233.2831
	Web		5.1504	5.8650	30.2071	49.4150	0.5304	1.4487	50.8637
2	Horizontal Legs		3.5000	0.2500	0.8750	0.0729	6.1454	132.1787	132.2516
	Vertical Legs		6.0000	3.0000	18.0000	18.0000	3.3954	69.1704	87.1704
3	Additional Plate		0.0000	0.5000	0.0000	0.0000	5.8954	0.0000	0.0000
<b>Total</b>			<b>23.20</b>		<b>148.36</b>	<b>67.91</b>		<b>435.66</b>	<b>503.57</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	6.3954	in	S <sub>top</sub> =	89.85	in <sup>3</sup>	y-bar =	6.3954	in	S <sub>top</sub> =	89.85	in <sup>3</sup>
I <sub>x</sub> =	503.57	in <sup>4</sup>	S <sub>bott.</sub> =	78.74	in <sup>3</sup>	I <sub>x</sub> =	503.57	in <sup>4</sup>	S <sub>bott.</sub> =	78.74	in <sup>3</sup>
C <sub>top</sub> =	5.6046	in	A =	23.1974	in <sup>2</sup>	C <sub>top</sub> =	5.6046	in	A =	23.1974	in <sup>2</sup>
C <sub>bottom</sub> =	6.3954	in	r <sub>x</sub> =	4.6592	in	C <sub>bottom</sub> =	6.3954	in	r <sub>x</sub> =	4.6592	in
J =	2.8764	in <sup>4</sup>	Z =	99.74	in <sup>3</sup>	Z =	99.74	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		8.5470	4.2400	36.2393	87.7563	1.3100	14.6675	102.4238
	Web		5.1504	4.2400	21.8377	0.0989	1.3100	8.8386	8.9375
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.8000	25.2700	27.0565
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.8000	9.7200	9.7825
2 (Right)	Horizontal Leg		1.7500	6.7300	11.7775	1.7865	1.1800	2.4367	4.2232
	Vertical Leg		3.0000	4.7300	14.1900	0.0625	0.8200	2.0172	2.0797
3	Additional Plate		0.0000	4.2400	0.0000	0.0000	1.3100	0.0000	0.0000
<b>Total</b>			<b>23.20</b>		<b>98.36</b>	<b>91.55</b>		<b>62.95</b>	<b>154.50</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.5500	in	S <sub>right</sub> =	27.84	in <sup>3</sup>	x-bar =	5.5500	in	S <sub>right</sub> =	27.84	in <sup>3</sup>
I <sub>y</sub> =	154.50	n <sup>4</sup>	S <sub>left</sub> =	27.84	in <sup>3</sup>	I <sub>y</sub> =	154.50	n <sup>4</sup>	S <sub>left</sub> =	27.84	in <sup>3</sup>
C <sub>right</sub> =	5.5500	in	A =	23.1974	in <sup>2</sup>	C <sub>right</sub> =	5.5500	in	A =	23.1974	in <sup>2</sup>
C <sub>left</sub> =	5.5500	in	r <sub>y</sub> =	2.5808	in	C <sub>left</sub> =	5.5500	in	r <sub>y</sub> =	2.5808	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	299.22 k-ft	299.22 k-ft
V	222.38 k	222.38 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





Made By CTG  
Checked By DMP

Date 3/16/2012  
Date 3/27/2012

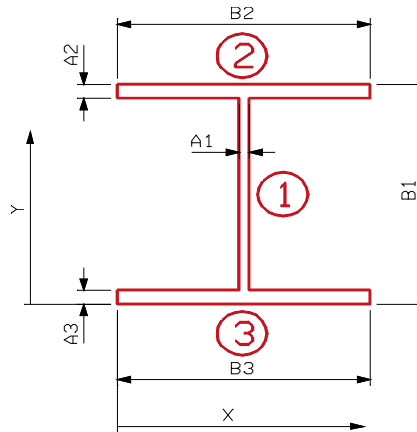
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 40.0000$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



Fascia Stringer F2A-8 Avg

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		14.4375	20.0000	288.7500	1783.3320	0.0000	0.0000	1783.3320
2	Top Flange		6.0000	39.6250	237.7500	0.2813	19.6250	2310.8438	2311.1250
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	19.6250	2310.8438	2311.1250
<b>Total</b>			<b>26.44</b>		<b>528.75</b>	<b>1783.89</b>		<b>4621.69</b>	<b>6405.58</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	20.0000	in	$S_{top} = 320.28$	in <sup>3</sup>	y-bar =	20.0000	in	$S_{top} = 320.28$	in <sup>3</sup>		
$I_x =$	6405.58	n <sup>4</sup>	$S_{bott.} = 320.28$	in <sup>3</sup>	$I_x =$	6405.58	n <sup>4</sup>	$S_{bott.} = 320.28$	in <sup>3</sup>		
$C_{top} =$	20.0000	in	A =	26.4375	in <sup>2</sup>	$C_{top} =$	20.0000	in	A =	26.4375	in <sup>2</sup>
$C_{bottom} =$	20.0000	in	$r_x =$	15.5657	in	$C_{bottom} =$	20.0000	in	$r_x =$	15.5657	in
J =	2.9268	in <sup>4</sup>	Z =	374.46	in <sup>3</sup>	Z =	374.46	in <sup>3</sup>			



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	14.4375	4.0000	57.7500	0.1692	0.0000	0.0000	0.1692
2	Top Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>		<b>26.44</b>		<b>105.75</b>	<b>64.17</b>		<b>0.00</b>	<b>64.17</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 16.04 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 16.04 in <sup>3</sup>
I <sub>y</sub> =	64.17	in <sup>4</sup>	S <sub>left</sub> = 16.04 in <sup>3</sup>	I <sub>y</sub> =	64.17	in <sup>4</sup>	S <sub>left</sub> = 16.04 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 26.4375 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 26.4375 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.5579 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.5579 in

Non-composite Capacities*		
	AB	AI
M	960.84 k-ft	960.84 k-ft
V	178.75 k	178.75 k

\*Noncompact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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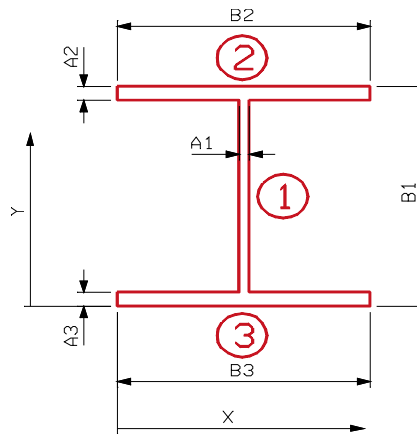
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 39.0000$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



Fascia Stringer F2B-8 Avg

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		14.0625	19.5000	274.2188	1647.9492	0.0000	0.0000	1647.9492
2	Top Flange		6.0000	38.6250	231.7500	0.2813	19.1250	2194.5938	2194.8750
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	19.1250	2194.5938	2194.8750
<b>Total</b>			<b>26.06</b>		<b>508.22</b>	<b>1648.51</b>		<b>4389.19</b>	<b>6037.70</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	19.5000 in	$S_{top} =$	309.63 in <sup>3</sup>	y-bar =	19.5000 in	$S_{top} =$	309.63 in <sup>3</sup>
$I_x =$	6037.70 in <sup>4</sup>	$S_{bottom} =$	309.63 in <sup>3</sup>	$I_x =$	6037.70 in <sup>4</sup>	$S_{bottom} =$	309.63 in <sup>3</sup>
$C_{top} =$	19.5000 in	A =	26.0625 in <sup>2</sup>	$C_{top} =$	19.5000 in	A =	26.0625 in <sup>2</sup>
$C_{bottom} =$	19.5000 in	$r_x =$	15.2205 in	$C_{bottom} =$	19.5000 in	$r_x =$	15.2205 in
J =	2.9092 in <sup>4</sup>	Z =	361.34 in <sup>3</sup>			Z =	361.34 in <sup>3</sup>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	14.0625	4.0000	56.2500	0.1648	0.0000	0.0000	0.1648
2	Top Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>		<b>26.06</b>		<b>104.25</b>	<b>64.16</b>		<b>0.00</b>	<b>64.16</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 16.04 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 16.04 in <sup>3</sup>
I <sub>y</sub> =	64.16	in <sup>4</sup>	S <sub>left</sub> = 16.04 in <sup>3</sup>	I <sub>y</sub> =	64.16	in <sup>4</sup>	S <sub>left</sub> = 16.04 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 26.0625 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 26.0625 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.5691 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.5691 in

Non-composite Capacities*		
	AB	AI
M	1084.01 k-ft	1084.01 k-ft
V	183.52 k	183.52 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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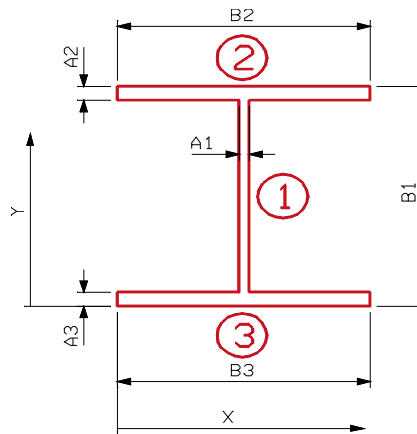
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 38.0313$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



Fascia Stringer F2C-8 Avg

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		13.6992	19.0156	260.4992	1523.5041	0.0000	0.0000	1523.5041
2	Top Flange		6.0000	37.6563	225.9375	0.2813	18.6406	2084.8374	2085.1187
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	18.6406	2084.8374	2085.1187
<b>Total</b>			<b>25.70</b>		<b>488.69</b>	<b>1524.07</b>		<b>4169.67</b>	<b>5693.74</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	19.0156	in	S <sub>top</sub> = 299.42 in <sup>3</sup>	y-bar =	19.0156	in	S <sub>top</sub> = 299.42 in <sup>3</sup>
I <sub>x</sub> =	5693.74	in <sup>4</sup>	S <sub>bottom</sub> = 299.42 in <sup>3</sup>	I <sub>x</sub> =	5693.74	in <sup>4</sup>	S <sub>bottom</sub> = 299.42 in <sup>3</sup>
C <sub>top</sub> =	19.0156	in	A = 25.6992 in <sup>2</sup>	C <sub>top</sub> =	19.0156	in	A = 25.6992 in <sup>2</sup>
C <sub>bottom</sub> =	19.0156	in	r <sub>x</sub> = 14.8847 in	C <sub>bottom</sub> =	19.0156	in	r <sub>x</sub> = 14.8847 in
J =	2.8922	in <sup>4</sup>	Z = 348.80 in <sup>3</sup>	J =	2.8922	in <sup>4</sup>	Z = <b>348.80</b> in <sup>3</sup>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	13.6992	4.0000	54.7969	0.1605	0.0000	0.0000	0.1605
2	Top Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>		<b>25.70</b>		<b>102.80</b>	<b>64.16</b>		<b>0.00</b>	<b>64.16</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 16.04 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 16.04 in <sup>3</sup>
I <sub>y</sub> =	64.16	in <sup>4</sup>	S <sub>left</sub> = 16.04 in <sup>3</sup>	I <sub>y</sub> =	64.16	in <sup>4</sup>	S <sub>left</sub> = 16.04 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 25.6992 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 25.6992 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.5801 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.5801 in

Non-composite Capacities*		
	AB	AI
M	1046.40 k-ft	1046.40 k-ft
V	188.38 k	188.38 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/16/2012  
Date 3/26/2012

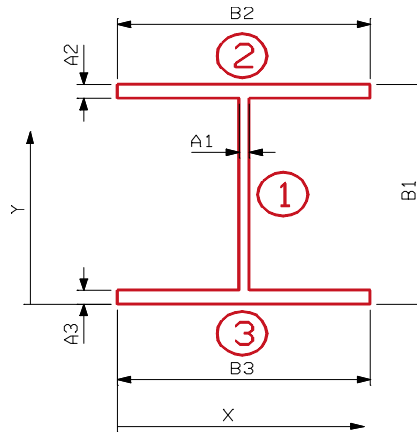
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 28.5000$  in
- $A_2 = t_f = 1.0000$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 1.0000$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



Fascia Stringer F1A-9 Avg

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		9.9375	14.2500	141.6094	581.5508	0.0000	0.0000	581.5508
2	Top Flange		8.0000	28.0000	224.0000	0.6667	13.7500	1512.5000	1513.1667
3	Bottom Flange		8.0000	0.5000	4.0000	0.6667	13.7500	1512.5000	1513.1667
<b>Total</b>			<b>25.94</b>		<b>369.61</b>	<b>582.88</b>		<b>3025.00</b>	<b>3607.88</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	14.2500	in	$S_{top} = 253.18$ in <sup>3</sup>	y-bar =	14.2500	in	$S_{top} = 253.18$ in <sup>3</sup>
$I_x =$	3607.88	in <sup>4</sup>	$S_{bottom} = 253.18$ in <sup>3</sup>	$I_x =$	3607.88	in <sup>4</sup>	$S_{bottom} = 253.18$ in <sup>3</sup>
$C_{top} =$	14.2500	in	$A = 25.9375$ in <sup>2</sup>	$C_{top} =$	14.2500	in	$A = 25.9375$ in <sup>2</sup>
$C_{bottom} =$	14.2500	in	$r_x = 11.7940$ in	$C_{bottom} =$	14.2500	in	$r_x = 11.7940$ in
$J =$	5.7992	in <sup>4</sup>	$Z = 285.84$ in <sup>3</sup>	$Z =$	285.84	in <sup>3</sup>	



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Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	9.9375	4.0000	39.7500	0.1165	0.0000	0.0000	0.1165
2	Top Flange	8.0000	4.0000	32.0000	42.6667	0.0000	0.0000	42.6667
3	Bottom Flange	8.0000	4.0000	32.0000	42.6667	0.0000	0.0000	42.6667
<b>Total</b>		<b>25.94</b>		<b>103.75</b>	<b>85.45</b>		<b>0.00</b>	<b>85.45</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 21.36 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 21.36 in <sup>3</sup>
I <sub>y</sub> =	85.45	in <sup>4</sup>	S <sub>left</sub> = 21.36 in <sup>3</sup>	I <sub>y</sub> =	85.45	in <sup>4</sup>	S <sub>left</sub> = 21.36 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 25.9375 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 25.9375 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.8151 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.8151 in

Non-composite Capacities*		
	AB	AI
M	857.51 k-ft	857.51 k-ft
V	207.50 k	207.50 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear





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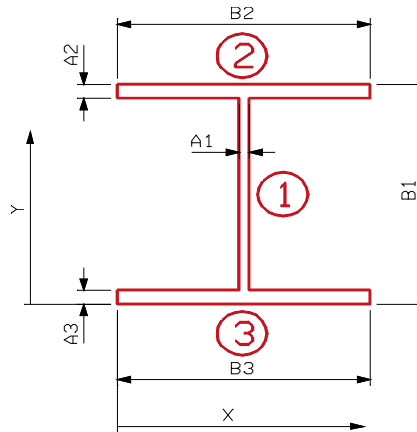
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 26.0000$  in
- $A_2 = t_f = 1.0000$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 1.0000$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F1B-9 & F1C-9**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		9.0000	13.0000	117.0000	432.0000	0.0000	0.0000	432.0000
2	Top Flange		8.0000	25.5000	204.0000	0.6667	12.5000	1250.0000	1250.6667
3	Bottom Flange		8.0000	0.5000	4.0000	0.6667	12.5000	1250.0000	1250.6667
<b>Total</b>			<b>25.00</b>		<b>325.00</b>	<b>433.33</b>		<b>2500.00</b>	<b>2933.33</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	13.0000	in	$S_{top} = 225.64$	in <sup>3</sup>	y-bar =	13.0000	in	$S_{top} = 225.64$	in <sup>3</sup>		
$I_x =$	2933.33	n <sup>4</sup>	$S_{bott.} = 225.64$	in <sup>3</sup>	$I_x =$	2933.33	n <sup>4</sup>	$S_{bott.} = 225.64$	in <sup>3</sup>		
$C_{top} =$	13.0000	in	A =	25.0000	in <sup>2</sup>	$C_{top} =$	13.0000	in	A =	25.0000	in <sup>2</sup>
$C_{bottom} =$	13.0000	in	$r_x =$	10.8321	in	$C_{bottom} =$	13.0000	in	$r_x =$	10.8321	in
J =	5.7552	in <sup>4</sup>	Z =	254.00	in <sup>3</sup>	Z =	254.00	in <sup>3</sup>			



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Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	9.0000	4.0000	36.0000	0.1055	0.0000	0.0000	0.1055
2	Top Flange	8.0000	4.0000	32.0000	42.6667	0.0000	0.0000	42.6667
3	Bottom Flange	8.0000	4.0000	32.0000	42.6667	0.0000	0.0000	42.6667
<b>Total</b>		<b>25.00</b>		<b>100.00</b>	<b>85.44</b>		<b>0.00</b>	<b>85.44</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000 in	S <sub>right</sub> =	21.36 in <sup>3</sup>	x-bar =	4.0000 in	S <sub>right</sub> =	21.36 in <sup>3</sup>
I <sub>y</sub> =	85.44 in <sup>4</sup>	S <sub>left</sub> =	21.36 in <sup>3</sup>	I <sub>y</sub> =	85.44 in <sup>4</sup>	S <sub>left</sub> =	21.36 in <sup>3</sup>
C <sub>right</sub> =	4.0000 in	A =	25.0000 in <sup>2</sup>	C <sub>right</sub> =	4.0000 in	A =	25.0000 in <sup>2</sup>
C <sub>left</sub> =	4.0000 in	r <sub>y</sub> =	1.8487 in	C <sub>left</sub> =	4.0000 in	r <sub>y</sub> =	1.8487 in

Non-composite Capacities*		
	AB	AI
M	762.00 k-ft	762.00 k-ft
V	187.92 k	187.92 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x97	<b>Bottom Angles:</b>
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.8700 in	$B_2 = L_h =$ 4.0000 in
$C_1 = d =$	8.2500 in	$C_2 = t =$ 0.5000 in
$D_1 = t_w =$	0.5350 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	$H =$ 8.7500 in
$B_3 = t =$	0.5350 in	$Gap =$ 0.5000 in

\*select from dropdown list

**Coped Stringer S1-9 @ FB C5**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6570	8.3150	80.2980	0.6091	3.3068	105.5976	106.2067
	Web	3.9483	4.1900	16.5434	17.9201	0.8182	2.6433	20.5634
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	4.7582	79.2422	79.3151
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	2.0082	24.1976	42.1976
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	4.5082	0.0000	0.0000
<b>Total</b>		<b>23.11</b>		<b>115.72</b>	<b>36.60</b>		<b>211.68</b>	<b>248.28</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	5.0082	in	S <sub>top</sub> =	66.35	in <sup>3</sup>	y-bar =	5.0082	in	S <sub>top</sub> =	66.35	in <sup>3</sup>
I <sub>x</sub> =	248.28	in <sup>4</sup>	S <sub>bottom</sub> =	49.58	in <sup>3</sup>	I <sub>x</sub> =	248.28	in <sup>4</sup>	S <sub>bottom</sub> =	49.58	in <sup>3</sup>
C <sub>top</sub> =	3.7418	in	A =	23.1053	in <sup>2</sup>	C <sub>top</sub> =	3.7418	in	A =	23.1053	in <sup>2</sup>
C <sub>bottom</sub> =	5.0082	in	r <sub>x</sub> =	3.2781	in	C <sub>bottom</sub> =	5.0082	in	r <sub>x</sub> =	3.2781	in
J =	3.6048	in <sup>4</sup>	Z =	69.00	in <sup>3</sup>	Z =	69.00	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6570	4.2675	41.2112	99.1532	1.2825	15.8839	115.0371
	Web	3.9483	4.2675	16.8494	0.0942	1.2825	6.4942	6.5884
2 (Left)	Horizontal Leg	1.7500	1.7500	3.0625	1.7865	3.8000	25.2700	27.0565
	Vertical Leg	3.0000	3.7500	11.2500	0.0625	1.8000	9.7200	9.7825
2 (Right)	Horizontal Leg	1.7500	6.7850	11.8738	1.7865	1.2350	2.6691	4.4556
	Vertical Leg	3.0000	4.7850	14.3550	0.0625	0.7650	1.7557	1.8182
3	Additional Plate	0.0000	4.2675	0.0000	0.0000	1.2825	0.0000	0.0000
<b>Total</b>		<b>23.11</b>		<b>98.60</b>	<b>102.95</b>		<b>61.79</b>	<b>164.74</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.5500	in	S <sub>right</sub> =	29.68	in <sup>3</sup>	x-bar =	5.5500	in	S <sub>right</sub> =	29.68	in <sup>3</sup>
I <sub>y</sub> =	164.74	in <sup>4</sup>	S <sub>left</sub> =	29.68	in <sup>3</sup>	I <sub>y</sub> =	164.74	in <sup>4</sup>	S <sub>left</sub> =	29.68	in <sup>3</sup>
C <sub>right</sub> =	5.5500	in	A =	23.1053	in <sup>2</sup>	C <sub>right</sub> =	5.5500	in	A =	23.1053	in <sup>2</sup>
C <sub>left</sub> =	5.5500	in	r <sub>y</sub> =	2.6702	in	C <sub>left</sub> =	5.5500	in	r <sub>y</sub> =	2.6702	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	207.00 k-ft	207.00 k-ft
V	197.28 k	197.28 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x97	<b>Bottom Angles:</b>
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.8700 in	$B_2 = L_h =$ 6.0000 in
$C_1 = d =$	7.7500 in	$C_2 = t =$ 0.6250 in
$D_1 = t_w =$	0.5350 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	$H =$ 8.2500 in
$B_3 = t =$	0.5350 in	$Gap =$ 0.5000 in

\*select from dropdown list

**Coped Stringer S1-9 @ FB C6**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6570	7.8150	75.4695	0.6091	3.6573	129.1717	129.7808
	Web	3.6808	3.9400	14.5024	14.5190	0.2177	0.1744	14.6935
2	Horizontal Legs	6.7188	0.3125	2.0996	0.2187	3.8452	99.3397	99.5584
	Vertical Legs	7.5000	3.0000	22.5000	22.5000	1.1577	10.0517	32.5517
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	3.6577	0.0000	0.0000
<b>Total</b>		<b>27.56</b>		<b>114.57</b>	<b>37.85</b>		<b>238.74</b>	<b>276.58</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	4.1577 in	S <sub>top</sub> =	67.59 in <sup>3</sup>	y-bar =	4.1577 in	S <sub>top</sub> =	67.59 in <sup>3</sup>
I <sub>x</sub> =	276.58 in <sup>4</sup>	S <sub>bottom</sub> =	66.52 in <sup>3</sup>	I <sub>x</sub> =	276.58 in <sup>4</sup>	S <sub>bottom</sub> =	66.52 in <sup>3</sup>
C <sub>top</sub> =	4.0923 in	A =	27.5566 in <sup>2</sup>	C <sub>top</sub> =	4.0923 in	A =	27.5566 in <sup>2</sup>
C <sub>bottom</sub> =	4.1577 in	r <sub>x</sub> =	3.1681 in	C <sub>bottom</sub> =	4.1577 in	r <sub>x</sub> =	3.1681 in
J =	4.6390 in <sup>4</sup>	Z =	80.43 in <sup>3</sup>	Z =	80.43 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6570	6.2675	60.5252	99.1532	0.0000	0.0000	99.1532
	Web		3.6808	6.2675	23.0694	0.0878	0.0000	0.0000	0.0878
2 (Left)	Horizontal Leg		3.3594	2.6875	9.0283	8.0879	3.5800	43.0551	51.1430
	Vertical Leg		3.7500	5.6875	21.3281	0.1221	0.5800	1.2615	1.3836
2 (Right)	Horizontal Leg		3.3594	9.8475	33.0814	8.0879	3.5800	43.0551	51.1430
	Vertical Leg		3.7500	6.8475	25.6781	0.1221	0.5800	1.2615	1.3836
3	Additional Plate		0.0000	6.2675	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>27.56</b>		<b>172.71</b>	<b>115.66</b>		<b>88.63</b>	<b>204.29</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.2675 in	S <sub>right</sub> =	32.60 in <sup>3</sup>	x-bar =	6.2675 in	S <sub>right</sub> =	32.60 in <sup>3</sup>
I <sub>y</sub> =	204.29 in <sup>4</sup>	S <sub>left</sub> =	32.60 in <sup>3</sup>	I <sub>y</sub> =	204.29 in <sup>4</sup>	S <sub>left</sub> =	32.60 in <sup>3</sup>
C <sub>right</sub> =	6.2675 in	A =	27.5566 in <sup>2</sup>	C <sub>right</sub> =	6.2675 in	A =	27.5566 in <sup>2</sup>
C <sub>left</sub> =	6.2675 in	r <sub>y</sub> =	2.7228 in	C <sub>left</sub> =	6.2675 in	r <sub>y</sub> =	2.7228 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	241.29 k-ft	241.29 k-ft
V	217.14 k	217.14 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x97	<b>Bottom Angles:</b>
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.8700 in	$B_2 = L_h =$ 6.0000 in
$C_1 = d =$	7.6250 in	$C_2 = t =$ 0.6250 in
$D_1 = t_w =$	0.5350 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	$H =$ 8.1250 in
$B_3 = t =$	0.5350 in	$Gap =$ 0.5000 in

\*select from dropdown list

**Coped Stringer S1-9 @ FB C7**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6570	7.6900	74.2623	0.6091	3.5839	124.0388	124.6480
	Web	3.6139	3.8775	14.0130	13.7420	0.2286	0.1888	13.9308
2	Horizontal Legs	6.7188	0.3125	2.0996	0.2187	3.7936	96.6914	96.9102
	Vertical Legs	7.5000	3.0000	22.5000	22.5000	1.1061	9.1757	31.6757
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	3.6061	0.0000	0.0000
<b>Total</b>		<b>27.49</b>		<b>112.87</b>	<b>37.07</b>		<b>230.09</b>	<b>267.16</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	4.1061 in	S <sub>top</sub> =	66.48 in <sup>3</sup>	y-bar =	4.1061 in	S <sub>top</sub> =	66.48 in <sup>3</sup>
I <sub>x</sub> =	267.16 in <sup>4</sup>	S <sub>bott.</sub> =	65.07 in <sup>3</sup>	I <sub>x</sub> =	267.16 in <sup>4</sup>	S <sub>bott.</sub> =	65.07 in <sup>3</sup>
C <sub>top</sub> =	4.0189 in	A =	27.4897 in <sup>2</sup>	C <sub>top</sub> =	4.0189 in	A =	27.4897 in <sup>2</sup>
C <sub>bottom</sub> =	4.1061 in	r <sub>x</sub> =	3.1175 in	C <sub>bottom</sub> =	4.1061 in	r <sub>x</sub> =	3.1175 in
J =	4.6327 in <sup>4</sup>	Z =	79.01 in <sup>3</sup>	Z =	79.01 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6570	6.2675	60.5252	99.1532	0.0000	0.0000	99.1532
	Web		3.6139	6.2675	22.6503	0.0862	0.0000	0.0000	0.0862
2 (Left)	Horizontal Leg		3.3594	2.6875	9.0283	8.0879	3.5800	43.0551	51.1430
	Vertical Leg		3.7500	5.6875	21.3281	0.1221	0.5800	1.2615	1.3836
2 (Right)	Horizontal Leg		3.3594	9.8475	33.0814	8.0879	3.5800	43.0551	51.1430
	Vertical Leg		3.7500	6.8475	25.6781	0.1221	0.5800	1.2615	1.3836
3	Additional Plate		0.0000	6.2675	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>27.49</b>		<b>172.29</b>	<b>115.66</b>		<b>88.63</b>	<b>204.29</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.2675 in	S <sub>right</sub> =	32.60 in <sup>3</sup>	x-bar =	6.2675 in	S <sub>right</sub> =	32.60 in <sup>3</sup>
I <sub>y</sub> =	204.29 in <sup>4</sup>	S <sub>left</sub> =	32.60 in <sup>3</sup>	I <sub>y</sub> =	204.29 in <sup>4</sup>	S <sub>left</sub> =	32.60 in <sup>3</sup>
C <sub>right</sub> =	6.2675 in	A =	27.4897 in <sup>2</sup>	C <sub>right</sub> =	6.2675 in	A =	27.4897 in <sup>2</sup>
C <sub>left</sub> =	6.2675 in	r <sub>y</sub> =	2.7261 in	C <sub>left</sub> =	6.2675 in	r <sub>y</sub> =	2.7261 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
<b>M</b>	237.03 k-ft	237.03 k-ft
<b>V</b>	215.75 k	215.75 k

<b>F<sub>y</sub> =</b>	<b>36.00 ksi</b>
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\*Compact Section





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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x97	<b>Bottom Angles:</b>
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.8700 in	$B_2 = L_h =$ 4.0000 in
$C_1 = d =$	7.0000 in	$C_2 = t =$ 0.5000 in
$D_1 = t_w =$	0.5350 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	$H =$ 7.5625 in
$B_3 = t =$	0.5350 in	$Gap =$ 0.5625 in

\*select from dropdown list

**Coped Stringer S1-9 @ FB C8**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6570	7.1275	68.8303	0.6091	2.6882	69.7872	70.3964
	Web	3.2796	3.6275	11.8966	10.2696	0.8118	2.1611	12.4307
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	4.1893	61.4249	61.4978
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	1.4393	12.4289	30.4289
3	Additional Plate	0.0000	0.5625	0.0000	0.0000	3.8768	0.0000	0.0000
<b>Total</b>		<b>22.44</b>		<b>99.60</b>	<b>28.95</b>		<b>145.80</b>	<b>174.75</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	4.4393 in	S <sub>top</sub> =	55.95 in <sup>3</sup>	y-bar =	4.4393 in	S <sub>top</sub> =	55.95 in <sup>3</sup>
I <sub>x</sub> =	174.75 in <sup>4</sup>	S <sub>bottom</sub> =	39.37 in <sup>3</sup>	I <sub>x</sub> =	174.75 in <sup>4</sup>	S <sub>bottom</sub> =	39.37 in <sup>3</sup>
C <sub>top</sub> =	3.1232 in	A =	22.4366 in <sup>2</sup>	C <sub>top</sub> =	3.1232 in	A =	22.4366 in <sup>2</sup>
C <sub>bottom</sub> =	4.4393 in	r <sub>x</sub> =	2.7908 in	C <sub>bottom</sub> =	4.4393 in	r <sub>x</sub> =	2.7908 in
J =	3.5410 in <sup>4</sup>	Z =	56.13 in <sup>3</sup>	Z =	56.13 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6570	4.2675	41.2112	99.1532	1.2825	15.8839	115.0371
	Web	3.2796	4.2675	13.9955	0.0782	1.2825	5.3942	5.4724
2 (Left)	Horizontal Leg	1.7500	1.7500	3.0625	1.7865	3.8000	25.2700	27.0565
	Vertical Leg	3.0000	3.7500	11.2500	0.0625	1.8000	9.7200	9.7825
2 (Right)	Horizontal Leg	1.7500	6.7850	11.8738	1.7865	1.2350	2.6691	4.4556
	Vertical Leg	3.0000	4.7850	14.3550	0.0625	0.7650	1.7557	1.8182
3	Additional Plate	0.0000	4.2675	0.0000	0.0000	1.2825	0.0000	0.0000
<b>Total</b>		<b>22.44</b>		<b>95.75</b>	<b>102.93</b>		<b>60.69</b>	<b>163.62</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.5500 in	S <sub>right</sub> =	29.48 in <sup>3</sup>	x-bar =	5.5500 in	S <sub>right</sub> =	29.48 in <sup>3</sup>
I <sub>y</sub> =	163.62 in <sup>4</sup>	S <sub>left</sub> =	29.48 in <sup>3</sup>	I <sub>y</sub> =	163.62 in <sup>4</sup>	S <sub>left</sub> =	29.48 in <sup>3</sup>
C <sub>right</sub> =	5.5500 in	A =	22.4366 in <sup>2</sup>	C <sub>right</sub> =	5.5500 in	A =	22.4366 in <sup>2</sup>
C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.7005 in	C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.7005 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	168.39 k-ft	168.39 k-ft
V	183.32 k	183.32 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x97	<b>Bottom Angles:</b>
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.8700 in	$B_2 = L_h =$ 4.0000 in
$C_1 = d =$	9.0000 in	$C_2 = t =$ 0.5000 in
$D_1 = t_w =$	0.5350 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	H = 9.5000 in
$B_3 = t =$	0.5350 in	Gap = 0.5000 in

\*select from dropdown list

Coped Stringer S2-9 @ FB C5

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6570	9.0650	87.5407	0.6091	3.6932	131.7221	132.3312
	Web	4.3496	4.5650	19.8557	23.9576	0.8068	2.8309	26.7886
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.1218	91.8133	91.8862
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	2.3718	33.7513	51.7513
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	4.8718	0.0000	0.0000
<b>Total</b>		<b>23.51</b>		<b>126.27</b>	<b>42.64</b>		<b>260.12</b>	<b>302.76</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	5.3718 in	S <sub>top</sub> =	73.34 in <sup>3</sup>	y-bar =	5.3718 in	S <sub>top</sub> =	73.34 in <sup>3</sup>
I <sub>x</sub> =	302.76 in <sup>4</sup>	S <sub>bott.</sub> =	56.36 in <sup>3</sup>	I <sub>x</sub> =	302.76 in <sup>4</sup>	S <sub>bott.</sub> =	56.36 in <sup>3</sup>
C <sub>top</sub> =	4.1282 in	A =	23.5066 in <sup>2</sup>	C <sub>top</sub> =	4.1282 in	A =	23.5066 in <sup>2</sup>
C <sub>bottom</sub> =	5.3718 in	r <sub>x</sub> =	3.5888 in	C <sub>bottom</sub> =	5.3718 in	r <sub>x</sub> =	3.5888 in
J =	3.6431 in <sup>4</sup>	Z =	77.36 in <sup>3</sup>			Z =	77.36 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6570	4.2675	41.2112	99.1532	1.2825	15.8839	115.0371
	Web		4.3496	4.2675	18.5617	0.1037	1.2825	7.1542	7.2579
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.8000	25.2700	27.0565
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.8000	9.7200	9.7825
2 (Right)	Horizontal Leg		1.7500	6.7850	11.8738	1.7865	1.2350	2.6691	4.4556
	Vertical Leg		3.0000	4.7850	14.3550	0.0625	0.7650	1.7557	1.8182
3	Additional Plate		0.0000	4.2675	0.0000	0.0000	1.2825	0.0000	0.0000
<b>Total</b>			<b>23.51</b>		<b>100.31</b>	<b>102.95</b>		<b>62.45</b>	<b>165.41</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.5500 in	S <sub>right</sub> =	29.80 in <sup>3</sup>	x-bar =	5.5500 in	S <sub>right</sub> =	29.80 in <sup>3</sup>
I <sub>y</sub> =	165.41 in <sup>4</sup>	S <sub>left</sub> =	29.80 in <sup>3</sup>	I <sub>y</sub> =	165.41 in <sup>4</sup>	S <sub>left</sub> =	29.80 in <sup>3</sup>
C <sub>right</sub> =	5.5500 in	A =	23.5066 in <sup>2</sup>	C <sub>right</sub> =	5.5500 in	A =	23.5066 in <sup>2</sup>
C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.6527 in	C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.6527 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	232.08 k-ft	232.08 k-ft
V	205.66 k	205.66 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



Made By CTG  
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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x97	<b>Bottom Angles:</b>
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.8700 in	$B_2 = L_h =$ 6.0000 in
$C_1 = d =$	8.5000 in	$C_2 = t =$ 0.6250 in
$D_1 = t_w =$	0.5350 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	$H =$ 9.0000 in
$B_3 = t =$	0.5350 in	$Gap =$ 0.5000 in

\*select from dropdown list

Coped Stringer S2-9 @ FB C6

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6570	8.5650	82.7122	0.6091	4.0966	162.0672	162.6763
	Web	4.0821	4.3150	17.6140	19.8037	0.1534	0.0960	19.8997
2	Horizontal Legs	6.7188	0.3125	2.0996	0.2187	4.1559	116.0414	116.2601
	Vertical Legs	7.5000	3.0000	22.5000	22.5000	1.4684	16.1709	38.6709
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	3.9684	0.0000	0.0000
<b>Total</b>		<b>27.96</b>		<b>124.93</b>	<b>43.13</b>		<b>294.38</b>	<b>337.51</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	4.4684	in	S <sub>top</sub> =	74.48	in <sup>3</sup>	y-bar =	4.4684	in	S <sub>top</sub> =	74.48	in <sup>3</sup>
I <sub>x</sub> =	337.51	in <sup>4</sup>	S <sub>bottom</sub> =	75.53	in <sup>3</sup>	I <sub>x</sub> =	337.51	in <sup>4</sup>	S <sub>bottom</sub> =	75.53	in <sup>3</sup>
C <sub>top</sub> =	4.5316	in	A =	27.9578	in <sup>2</sup>	C <sub>top</sub> =	4.5316	in	A =	27.9578	in <sup>2</sup>
C <sub>bottom</sub> =	4.4684	in	r <sub>x</sub> =	3.4745	in	C <sub>bottom</sub> =	4.4684	in	r <sub>x</sub> =	3.4745	in
J =	4.6773	in <sup>4</sup>	Z =	89.12	in <sup>3</sup>	Z =	89.12	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6570	6.2675	60.5252	99.1532	0.0000	0.0000	99.1532
	Web		4.0821	6.2675	25.5842	0.0974	0.0000	0.0000	0.0974
2 (Left)	Horizontal Leg		3.3594	2.6875	9.0283	8.0879	3.5800	43.0551	51.1430
	Vertical Leg		3.7500	5.6875	21.3281	0.1221	0.5800	1.2615	1.3836
2 (Right)	Horizontal Leg		3.3594	9.8475	33.0814	8.0879	3.5800	43.0551	51.1430
	Vertical Leg		3.7500	6.8475	25.6781	0.1221	0.5800	1.2615	1.3836
3	Additional Plate		0.0000	6.2675	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>27.96</b>		<b>175.23</b>	<b>115.67</b>		<b>88.63</b>	<b>204.30</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	6.2675	in	S <sub>right</sub> =	32.60	in <sup>3</sup>	x-bar =	6.2675	in	S <sub>right</sub> =	32.60	in <sup>3</sup>
I <sub>y</sub> =	204.30	in <sup>4</sup>	S <sub>left</sub> =	32.60	in <sup>3</sup>	I <sub>y</sub> =	204.30	in <sup>4</sup>	S <sub>left</sub> =	32.60	in <sup>3</sup>
C <sub>right</sub> =	6.2675	in	A =	27.9578	in <sup>2</sup>	C <sub>right</sub> =	6.2675	in	A =	27.9578	in <sup>2</sup>
C <sub>left</sub> =	6.2675	in	r <sub>y</sub> =	2.7033	in	C <sub>left</sub> =	6.2675	in	r <sub>y</sub> =	2.7033	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	267.36 k-ft	267.36 k-ft
V	225.52 k	225.52 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



Made By CTG  
Checked By DMP

Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x97	<b>Bottom Angles:</b>
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.8700 in	$B_2 = L_h =$ 6.0000 in
$C_1 = d =$	8.0000 in	$C_2 = t =$ 0.6250 in
$D_1 = t_w =$	0.5350 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	H = 8.5000 in
$B_3 = t =$	0.5350 in	Gap = 0.5000 in

\*select from dropdown list

**Coped Stringer S2-9 @ FB C7**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6570	8.0650	77.8837	0.6091	3.8040	139.7379	140.3470
	Web	3.8146	4.0650	15.5061	16.1600	0.1960	0.1466	16.3066
2	Horizontal Legs	6.7188	0.3125	2.0996	0.2187	3.9485	104.7518	104.9705
	Vertical Legs	7.5000	3.0000	22.5000	22.5000	1.2610	11.9267	34.4267
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	3.7610	0.0000	0.0000
<b>Total</b>		<b>27.69</b>		<b>117.99</b>	<b>39.49</b>		<b>256.56</b>	<b>296.05</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	4.2610 in	S <sub>top</sub> =	69.84 in <sup>3</sup>	y-bar =	4.2610 in	S <sub>top</sub> =	69.84 in <sup>3</sup>
I <sub>x</sub> =	296.05 in <sup>4</sup>	S <sub>bottom</sub> =	69.48 in <sup>3</sup>	I <sub>x</sub> =	296.05 in <sup>4</sup>	S <sub>bottom</sub> =	69.48 in <sup>3</sup>
C <sub>top</sub> =	4.2390 in	A =	27.6903 in <sup>2</sup>	C <sub>top</sub> =	4.2390 in	A =	27.6903 in <sup>2</sup>
C <sub>bottom</sub> =	4.2610 in	r <sub>x</sub> =	3.2698 in	C <sub>bottom</sub> =	4.2610 in	r <sub>x</sub> =	3.2698 in
J =	4.6518 in <sup>4</sup>	Z =	83.30 in <sup>3</sup>			Z =	83.30 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6570	6.2675	60.5252	99.1532	0.0000	0.0000	99.1532
	Web		3.8146	6.2675	23.9077	0.0910	0.0000	0.0000	0.0910
2 (Left)	Horizontal Leg		3.3594	2.6875	9.0283	8.0879	3.5800	43.0551	51.1430
	Vertical Leg		3.7500	5.6875	21.3281	0.1221	0.5800	1.2615	1.3836
2 (Right)	Horizontal Leg		3.3594	9.8475	33.0814	8.0879	3.5800	43.0551	51.1430
	Vertical Leg		3.7500	6.8475	25.6781	0.1221	0.5800	1.2615	1.3836
3	Additional Plate		0.0000	6.2675	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>27.69</b>		<b>173.55</b>	<b>115.66</b>		<b>88.63</b>	<b>204.30</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.2675 in	S <sub>right</sub> =	32.60 in <sup>3</sup>	x-bar =	6.2675 in	S <sub>right</sub> =	32.60 in <sup>3</sup>
I <sub>y</sub> =	204.30 in <sup>4</sup>	S <sub>left</sub> =	32.60 in <sup>3</sup>	I <sub>y</sub> =	204.30 in <sup>4</sup>	S <sub>left</sub> =	32.60 in <sup>3</sup>
C <sub>right</sub> =	6.2675 in	A =	27.6903 in <sup>2</sup>	C <sub>right</sub> =	6.2675 in	A =	27.6903 in <sup>2</sup>
C <sub>left</sub> =	6.2675 in	r <sub>y</sub> =	2.7162 in	C <sub>left</sub> =	6.2675 in	r <sub>y</sub> =	2.7162 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	249.90 k-ft	249.90 k-ft
V	219.94 k	219.94 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





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Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x97	<b>Bottom Angles:</b>	
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8700 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	7.2500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5350 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	7.7500 in
$B_3 = t =$	0.5350 in	$Gap =$	0.5000 in

\*select from dropdown list

**Coped Stringer S2-9 @ FB C8**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6570	7.3150	70.6410	0.6091	2.7909	75.2178	75.8269
	Web	3.4133	3.6900	12.5951	11.5780	0.8341	2.3749	13.9529
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	4.2741	63.9387	64.0117
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	1.5241	13.9379	31.9379
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	4.0241	0.0000	0.0000
<b>Total</b>		<b>22.57</b>		<b>102.11</b>	<b>30.26</b>		<b>155.47</b>	<b>185.73</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties					As-Inspected Section Properties						
y-bar =	4.5241	in	S <sub>top</sub> =	57.58	in <sup>3</sup>	y-bar =	4.5241	in	S <sub>top</sub> =	57.58	in <sup>3</sup>
I <sub>x</sub> =	185.73	in <sup>4</sup>	S <sub>bott.</sub> =	41.05	in <sup>3</sup>	I <sub>x</sub> =	185.73	in <sup>4</sup>	S <sub>bott.</sub> =	41.05	in <sup>3</sup>
C <sub>top</sub> =	3.2259	in	A =	22.5703	in <sup>2</sup>	C <sub>top</sub> =	3.2259	in	A =	22.5703	in <sup>2</sup>
C <sub>bottom</sub> =	4.5241	in	r <sub>x</sub> =	2.8686	in	C <sub>bottom</sub> =	4.5241	in	r <sub>x</sub> =	2.8686	in
J =	3.5538	in <sup>4</sup>	Z =	58.25	in <sup>3</sup>	Z =	58.25	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6570	4.2675	41.2112	99.1532	1.2825	15.8839	115.0371
	Web		3.4133	4.2675	14.5663	0.0814	1.2825	5.6142	5.6956
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.8000	25.2700	27.0565
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.8000	9.7200	9.7825
2 (Right)	Horizontal Leg		1.7500	6.7850	11.8738	1.7865	1.2350	2.6691	4.4556
	Vertical Leg		3.0000	4.7850	14.3550	0.0625	0.7650	1.7557	1.8182
3	Additional Plate		0.0000	4.2675	0.0000	0.0000	1.2825	0.0000	0.0000
<b>Total</b>			<b>22.57</b>		<b>96.32</b>	<b>102.93</b>		<b>60.91</b>	<b>163.85</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	5.5500	in	S <sub>right</sub> =	29.52	in <sup>3</sup>	x-bar =	5.5500	in	S <sub>right</sub> =	29.52	in <sup>3</sup>
I <sub>y</sub> =	163.85	in <sup>4</sup>	S <sub>left</sub> =	29.52	in <sup>3</sup>	I <sub>y</sub> =	163.85	in <sup>4</sup>	S <sub>left</sub> =	29.52	in <sup>3</sup>
C <sub>right</sub> =	5.5500	in	A =	22.5703	in <sup>2</sup>	C <sub>right</sub> =	5.5500	in	A =	22.5703	in <sup>2</sup>
C <sub>left</sub> =	5.5500	in	r <sub>y</sub> =	2.6943	in	C <sub>left</sub> =	5.5500	in	r <sub>y</sub> =	2.6943	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	174.75 k-ft	174.75 k-ft
V	186.11 k	186.11 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x97	<b>Bottom Angles:</b>
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.8700 in	$B_2 = L_h =$ 4.0000 in
$C_1 = d =$	10.2500 in	$C_2 = t =$ 0.5000 in
$D_1 = t_w =$	0.5350 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	$H =$ 10.7500 in
$B_3 = t =$	0.5350 in	$Gap =$ 0.5000 in

\*select from dropdown list

**Coped Stringer S3-9 @ FB C5**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6570	10.3150	99.6120	0.6091	4.3365	181.6025	182.2116
	Web	5.0183	5.1900	26.0450	36.7943	0.7885	3.1200	39.9143
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.7285	114.8548	114.9277
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	2.9785	53.2286	71.2286
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.4785	0.0000	0.0000
<b>Total</b>		<b>24.18</b>		<b>144.53</b>	<b>55.48</b>		<b>352.81</b>	<b>408.28</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	5.9785	in	S <sub>top</sub> =	85.57	in <sup>3</sup>	y-bar =	5.9785	in	S <sub>top</sub> =	85.57	in <sup>3</sup>
I <sub>x</sub> =	408.28	in <sup>4</sup>	S <sub>bott.</sub> =	68.29	in <sup>3</sup>	I <sub>x</sub> =	408.28	in <sup>4</sup>	S <sub>bott.</sub> =	68.29	in <sup>3</sup>
C <sub>top</sub> =	4.7715	in	A =	24.1753	in <sup>2</sup>	C <sub>top</sub> =	4.7715	in	A =	24.1753	in <sup>2</sup>
C <sub>bottom</sub> =	5.9785	in	r <sub>x</sub> =	4.1096	in	C <sub>bottom</sub> =	5.9785	in	r <sub>x</sub> =	4.1096	in
J =	3.7069	in <sup>4</sup>	Z =	91.83	in <sup>3</sup>	Z =	91.83	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6570	4.2675	41.2112	99.1532	1.2825	15.8839	115.0371
	Web		5.0183	4.2675	21.4156	0.1197	1.2825	8.2541	8.3738
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.8000	25.2700	27.0565
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.8000	9.7200	9.7825
2 (Right)	Horizontal Leg		1.7500	6.7850	11.8738	1.7865	1.2350	2.6691	4.4556
	Vertical Leg		3.0000	4.7850	14.3550	0.0625	0.7650	1.7557	1.8182
3	Additional Plate		0.0000	4.2675	0.0000	0.0000	1.2825	0.0000	0.0000
<b>Total</b>			<b>24.18</b>		<b>103.17</b>	<b>102.97</b>		<b>63.55</b>	<b>166.52</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.5500	in	S <sub>right</sub> =	30.00	in <sup>3</sup>	x-bar =	5.5500	in	S <sub>right</sub> =	30.00	in <sup>3</sup>
I <sub>y</sub> =	166.52	in <sup>4</sup>	S <sub>left</sub> =	30.00	in <sup>3</sup>	I <sub>y</sub> =	166.52	in <sup>4</sup>	S <sub>left</sub> =	30.00	in <sup>3</sup>
C <sub>right</sub> =	5.5500	in	A =	24.1753	in <sup>2</sup>	C <sub>right</sub> =	5.5500	in	A =	24.1753	in <sup>2</sup>
C <sub>left</sub> =	5.5500	in	r <sub>y</sub> =	2.6245	in	C <sub>left</sub> =	5.5500	in	r <sub>y</sub> =	2.6245	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	275.49 k-ft	275.49 k-ft
V	219.62 k	219.62 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x97	<b>Bottom Angles:</b>
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.8700 in	$B_2 = L_h =$ 6.0000 in
$C_1 = d =$	9.0000 in	$C_2 = t =$ 0.6250 in
$D_1 = t_w =$	0.5350 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	H = 9.5000 in
$B_3 = t =$	0.5350 in	Gap = 0.5000 in

\*select from dropdown list

**Coped Stringer S3-9 @ FB C6**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6570	9.0650	87.5407	0.6091	4.3885	185.9823	186.5914
	Web	4.3496	4.5650	19.8557	23.9576	0.1115	0.0541	24.0117
2	Horizontal Legs	6.7188	0.3125	2.0996	0.2187	4.3640	127.9560	128.1747
	Vertical Legs	7.5000	3.0000	22.5000	22.5000	1.6765	21.0802	43.5802
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	4.1765	0.0000	0.0000
<b>Total</b>		<b>28.23</b>		<b>132.00</b>	<b>47.29</b>		<b>335.07</b>	<b>382.36</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties					As-Inspected Section Properties						
y-bar =	4.6765	in	S <sub>top</sub> =	79.27	in <sup>3</sup>	y-bar =	4.6765	in	S <sub>top</sub> =	79.27	in <sup>3</sup>
I <sub>x</sub> =	382.36	in <sup>4</sup>	S <sub>bott.</sub> =	81.76	in <sup>3</sup>	I <sub>x</sub> =	382.36	in <sup>4</sup>	S <sub>bott.</sub> =	81.76	in <sup>3</sup>
C <sub>top</sub> =	4.8235	in	A =	28.2253	in <sup>2</sup>	C <sub>top</sub> =	4.8235	in	A =	28.2253	in <sup>2</sup>
C <sub>bottom</sub> =	4.6765	in	r <sub>x</sub> =	3.6806	in	C <sub>bottom</sub> =	4.6765	in	r <sub>x</sub> =	3.6806	in
J =	4.7028	in <sup>4</sup>	Z =	95.05	in <sup>3</sup>	Z =	95.05	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6570	6.2675	60.5252	99.1532	0.0000	0.0000	99.1532
	Web		4.3496	6.2675	27.2608	0.1037	0.0000	0.0000	0.1037
2 (Left)	Horizontal Leg		3.3594	2.6875	9.0283	8.0879	3.5800	43.0551	51.1430
	Vertical Leg		3.7500	5.6875	21.3281	0.1221	0.5800	1.2615	1.3836
2 (Right)	Horizontal Leg		3.3594	9.8475	33.0814	8.0879	3.5800	43.0551	51.1430
	Vertical Leg		3.7500	6.8475	25.6781	0.1221	0.5800	1.2615	1.3836
3	Additional Plate		0.0000	6.2675	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>28.23</b>		<b>176.90</b>	<b>115.68</b>		<b>88.63</b>	<b>204.31</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	6.2675	in	S <sub>right</sub> =	32.60	in <sup>3</sup>	x-bar =	6.2675	in	S <sub>right</sub> =	32.60	in <sup>3</sup>
I <sub>y</sub> =	204.31	in <sup>4</sup>	S <sub>left</sub> =	32.60	in <sup>3</sup>	I <sub>y</sub> =	204.31	in <sup>4</sup>	S <sub>left</sub> =	32.60	in <sup>3</sup>
C <sub>right</sub> =	6.2675	in	A =	28.2253	in <sup>2</sup>	C <sub>right</sub> =	6.2675	in	A =	28.2253	in <sup>2</sup>
C <sub>left</sub> =	6.2675	in	r <sub>y</sub> =	2.6905	in	C <sub>left</sub> =	6.2675	in	r <sub>y</sub> =	2.6905	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	285.15 k-ft	285.15 k-ft
V	231.11 k	231.11 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x97	<b>Bottom Angles:</b>
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.8700 in	$B_2 = L_h =$ 6.0000 in
$C_1 = d =$	9.3750 in	$C_2 = t =$ 0.6250 in
$D_1 = t_w =$	0.5350 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	$H =$ 9.8750 in
$B_3 = t =$	0.5350 in	$Gap =$ 0.5000 in

\*select from dropdown list

Coped Stringer S3-9 @ FB C7

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6570	9.4400	91.1621	0.6091	4.6069	204.9523	205.5614
	Web	4.5502	4.7525	21.6247	27.4281	0.0806	0.0296	27.4577
2	Horizontal Legs	6.7188	0.3125	2.0996	0.2187	4.5206	137.3055	137.5242
	Vertical Legs	7.5000	3.0000	22.5000	22.5000	1.8331	25.2029	47.7029
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	4.3331	0.0000	0.0000
<b>Total</b>		<b>28.43</b>		<b>137.39</b>	<b>50.76</b>		<b>367.49</b>	<b>418.25</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	4.8331 in	S <sub>top</sub> =	82.95 in <sup>3</sup>	y-bar =	4.8331 in	S <sub>top</sub> =	82.95 in <sup>3</sup>
I <sub>x</sub> =	418.25 in <sup>4</sup>	S <sub>bottom</sub> =	86.54 in <sup>3</sup>	I <sub>x</sub> =	418.25 in <sup>4</sup>	S <sub>bottom</sub> =	86.54 in <sup>3</sup>
C <sub>top</sub> =	5.0419 in	A =	28.4259 in <sup>2</sup>	C <sub>top</sub> =	5.0419 in	A =	28.4259 in <sup>2</sup>
C <sub>bottom</sub> =	4.8331 in	r <sub>x</sub> =	3.8358 in	C <sub>bottom</sub> =	4.8331 in	r <sub>x</sub> =	3.8358 in
J =	4.7220 in <sup>4</sup>	Z =	99.57 in <sup>3</sup>	Z =	99.57 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6570	6.2675	60.5252	99.1532	0.0000	0.0000	99.1532
	Web		4.5502	6.2675	28.5182	0.1085	0.0000	0.0000	0.1085
2 (Left)	Horizontal Leg		3.3594	2.6875	9.0283	8.0879	3.5800	43.0551	51.1430
	Vertical Leg		3.7500	5.6875	21.3281	0.1221	0.5800	1.2615	1.3836
2 (Right)	Horizontal Leg		3.3594	9.8475	33.0814	8.0879	3.5800	43.0551	51.1430
	Vertical Leg		3.7500	6.8475	25.6781	0.1221	0.5800	1.2615	1.3836
3	Additional Plate		0.0000	6.2675	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>28.43</b>		<b>178.16</b>	<b>115.68</b>		<b>88.63</b>	<b>204.31</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.2675 in	S <sub>right</sub> =	32.60 in <sup>3</sup>	x-bar =	6.2675 in	S <sub>right</sub> =	32.60 in <sup>3</sup>
I <sub>y</sub> =	204.31 in <sup>4</sup>	S <sub>left</sub> =	32.60 in <sup>3</sup>	I <sub>y</sub> =	204.31 in <sup>4</sup>	S <sub>left</sub> =	32.60 in <sup>3</sup>
C <sub>right</sub> =	6.2675 in	A =	28.4259 in <sup>2</sup>	C <sub>right</sub> =	6.2675 in	A =	28.4259 in <sup>2</sup>
C <sub>left</sub> =	6.2675 in	r <sub>y</sub> =	2.6810 in	C <sub>left</sub> =	6.2675 in	r <sub>y</sub> =	2.6810 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	298.71 k-ft	298.71 k-ft
V	235.30 k	235.30 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section





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Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x97	<b>Bottom Angles:</b>	
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8700 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	9.2500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5350 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	9.7500 in
$B_3 = t =$	0.5350 in	$Gap =$	0.5000 in

\*select from dropdown list

**Coped Stringer S3-9 @ FB C8**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6570	9.3150	89.9550	0.6091	3.8220	141.0650	141.6741
	Web	4.4833	4.6900	21.0267	26.2364	0.8030	2.8910	29.1274
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.2430	96.2124	96.2853
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	2.4930	37.2909	55.2909
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	4.9930	0.0000	0.0000
<b>Total</b>		<b>23.64</b>		<b>129.86</b>	<b>44.92</b>		<b>277.46</b>	<b>322.38</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	5.4930 in	S <sub>top</sub> =	75.73 in <sup>3</sup>	y-bar =	5.4930 in	S <sub>top</sub> =	75.73 in <sup>3</sup>
I <sub>x</sub> =	322.38 in <sup>4</sup>	S <sub>bott.</sub> =	58.69 in <sup>3</sup>	I <sub>x</sub> =	322.38 in <sup>4</sup>	S <sub>bott.</sub> =	58.69 in <sup>3</sup>
C <sub>top</sub> =	4.2570 in	A =	23.6403 in <sup>2</sup>	C <sub>top</sub> =	4.2570 in	A =	23.6403 in <sup>2</sup>
C <sub>bottom</sub> =	5.4930 in	r <sub>x</sub> =	3.6928 in	C <sub>bottom</sub> =	5.4930 in	r <sub>x</sub> =	3.6928 in
J =	3.6559 in <sup>4</sup>	Z =	80.20 in <sup>3</sup>	Z =	80.20 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6570	4.2675	41.2112	99.1532	1.2825	15.8839	115.0371
	Web		4.4833	4.2675	19.1325	0.1069	1.2825	7.3742	7.4811
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.8000	25.2700	27.0565
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.8000	9.7200	9.7825
2 (Right)	Horizontal Leg		1.7500	6.7850	11.8738	1.7865	1.2350	2.6691	4.4556
	Vertical Leg		3.0000	4.7850	14.3550	0.0625	0.7650	1.7557	1.8182
3	Additional Plate		0.0000	4.2675	0.0000	0.0000	1.2825	0.0000	0.0000
<b>Total</b>			<b>23.64</b>		<b>100.88</b>	<b>102.96</b>		<b>62.67</b>	<b>165.63</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.5500 in	S <sub>right</sub> =	29.84 in <sup>3</sup>	x-bar =	5.5500 in	S <sub>right</sub> =	29.84 in <sup>3</sup>
I <sub>y</sub> =	165.63 in <sup>4</sup>	S <sub>left</sub> =	29.84 in <sup>3</sup>	I <sub>y</sub> =	165.63 in <sup>4</sup>	S <sub>left</sub> =	29.84 in <sup>3</sup>
C <sub>right</sub> =	5.5500 in	A =	23.6403 in <sup>2</sup>	C <sub>right</sub> =	5.5500 in	A =	23.6403 in <sup>2</sup>
C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.6469 in	C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.6469 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	240.60 k-ft	240.60 k-ft
V	208.45 k	208.45 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x97	<b>Bottom Angles:</b>	
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8700 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	10.7500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5350 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	11.2500 in
$B_3 = t =$	0.5350 in	$Gap =$	0.5000 in

\*select from dropdown list

**Coped Stringer S4-9 @ FB C5**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6570	10.8150	104.4405	0.6091	4.5935	203.7675	204.3766
	Web		5.2858	5.4400	28.7548	42.9975	0.7815	3.2280	46.2256
2	Horizontal Legs		3.5000	0.2500	0.8750	0.0729	5.9715	124.8047	124.8776
	Vertical Legs		6.0000	3.0000	18.0000	18.0000	3.2215	62.2673	80.2673
3	Additional Plate		0.0000	0.5000	0.0000	0.0000	5.7215	0.0000	0.0000
<b>Total</b>			<b>24.44</b>		<b>152.07</b>	<b>61.68</b>		<b>394.07</b>	<b>455.75</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.2215 in	S <sub>top</sub> =	90.63 in <sup>3</sup>	y-bar =	6.2215 in	S <sub>top</sub> =	90.63 in <sup>3</sup>
I <sub>x</sub> =	455.75 in <sup>4</sup>	S <sub>bott.</sub> =	73.25 in <sup>3</sup>	I <sub>x</sub> =	455.75 in <sup>4</sup>	S <sub>bott.</sub> =	73.25 in <sup>3</sup>
C <sub>top</sub> =	5.0285 in	A =	24.4428 in <sup>2</sup>	C <sub>top</sub> =	5.0285 in	A =	24.4428 in <sup>2</sup>
C <sub>bottom</sub> =	6.2215 in	r <sub>x</sub> =	4.3180 in	C <sub>bottom</sub> =	6.2215 in	r <sub>x</sub> =	4.3180 in
J =	3.7324 in <sup>4</sup>	Z =	97.82 in <sup>3</sup>	Z =	97.82 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6570	4.2675	41.2112	99.1532	1.2825	15.8839	115.0371
	Web		5.2858	4.2675	22.5572	0.1261	1.2825	8.6941	8.8202
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.8000	25.2700	27.0565
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.8000	9.7200	9.7825
2 (Right)	Horizontal Leg		1.7500	6.7850	11.8738	1.7865	1.2350	2.6691	4.4556
	Vertical Leg		3.0000	4.7850	14.3550	0.0625	0.7650	1.7557	1.8182
3	Additional Plate		0.0000	4.2675	0.0000	0.0000	1.2825	0.0000	0.0000
<b>Total</b>			<b>24.44</b>		<b>104.31</b>	<b>102.98</b>		<b>63.99</b>	<b>166.97</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.5500 in	S <sub>right</sub> =	30.08 in <sup>3</sup>	x-bar =	5.5500 in	S <sub>right</sub> =	30.08 in <sup>3</sup>
I <sub>y</sub> =	166.97 in <sup>4</sup>	S <sub>left</sub> =	30.08 in <sup>3</sup>	I <sub>y</sub> =	166.97 in <sup>4</sup>	S <sub>left</sub> =	30.08 in <sup>3</sup>
C <sub>right</sub> =	5.5500 in	A =	24.4428 in <sup>2</sup>	C <sub>right</sub> =	5.5500 in	A =	24.4428 in <sup>2</sup>
C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.6136 in	C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.6136 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	293.46 k-ft	293.46 k-ft
V	225.21 k	225.21 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x97	<b>Bottom Angles:</b>
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.8700 in	$B_2 = L_h =$ 6.0000 in
$C_1 = d =$	9.1250 in	$C_2 = t =$ 0.6250 in
$D_1 = t_w =$	0.5350 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	H = 9.6250 in
$B_3 = t =$	0.5350 in	Gap = 0.5000 in

\*select from dropdown list

Coped Stringer S4-9 @ FB C6

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6570	9.1900	88.7478	0.6091	4.4613	192.2075	192.8166
	Web	4.4164	4.6275	20.4370	25.0798	0.1012	0.0452	25.1250
2	Horizontal Legs	6.7188	0.3125	2.0996	0.2187	4.4162	131.0330	131.2517
	Vertical Legs	7.5000	3.0000	22.5000	22.5000	1.7287	22.4123	44.9123
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	4.2287	0.0000	0.0000
<b>Total</b>		<b>28.29</b>		<b>133.78</b>	<b>48.41</b>		<b>345.70</b>	<b>394.11</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	4.7287	in	S <sub>top</sub> =	80.49	in <sup>3</sup>	y-bar =	4.7287	in	S <sub>top</sub> =	80.49	in <sup>3</sup>
I <sub>x</sub> =	394.11	in <sup>4</sup>	S <sub>bottom</sub> =	83.34	in <sup>3</sup>	I <sub>x</sub> =	394.11	in <sup>4</sup>	S <sub>bottom</sub> =	83.34	in <sup>3</sup>
C <sub>top</sub> =	4.8963	in	A =	28.2922	in <sup>2</sup>	C <sub>top</sub> =	4.8963	in	A =	28.2922	in <sup>2</sup>
C <sub>bottom</sub> =	4.7287	in	r <sub>x</sub> =	3.7323	in	C <sub>bottom</sub> =	4.7287	in	r <sub>x</sub> =	3.7323	in
J =	4.7092	in <sup>4</sup>	Z =	96.55	in <sup>3</sup>	Z =	96.55	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6570	6.2675	60.5252	99.1532	0.0000	0.0000	99.1532
	Web		4.4164	6.2675	27.6799	0.1053	0.0000	0.0000	0.1053
2 (Left)	Horizontal Leg		3.3594	2.6875	9.0283	8.0879	3.5800	43.0551	51.1430
	Vertical Leg		3.7500	5.6875	21.3281	0.1221	0.5800	1.2615	1.3836
2 (Right)	Horizontal Leg		3.3594	9.8475	33.0814	8.0879	3.5800	43.0551	51.1430
	Vertical Leg		3.7500	6.8475	25.6781	0.1221	0.5800	1.2615	1.3836
3	Additional Plate		0.0000	6.2675	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>28.29</b>		<b>177.32</b>	<b>115.68</b>		<b>88.63</b>	<b>204.31</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	6.2675	in	S <sub>right</sub> =	32.60	in <sup>3</sup>	x-bar =	6.2675	in	S <sub>right</sub> =	32.60	in <sup>3</sup>
I <sub>y</sub> =	204.31	in <sup>4</sup>	S <sub>left</sub> =	32.60	in <sup>3</sup>	I <sub>y</sub> =	204.31	in <sup>4</sup>	S <sub>left</sub> =	32.60	in <sup>3</sup>
C <sub>right</sub> =	6.2675	in	A =	28.2922	in <sup>2</sup>	C <sub>right</sub> =	6.2675	in	A =	28.2922	in <sup>2</sup>
C <sub>left</sub> =	6.2675	in	r <sub>y</sub> =	2.6873	in	C <sub>left</sub> =	6.2675	in	r <sub>y</sub> =	2.6873	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	289.65 k-ft	289.65 k-ft
V	232.50 k	232.50 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x97	<b>Bottom Angles:</b>
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.8700 in	$B_2 = L_h =$ 6.0000 in
$C_1 = d =$	9.7500 in	$C_2 = t =$ 0.6250 in
$D_1 = t_w =$	0.5350 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	$H =$ 10.2500 in
$B_3 = t =$	0.5350 in	$GAP =$ 0.5000 in

\*select from dropdown list

Coped Stringer S4-9 @ FB C7

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6570	9.8150	94.7835	0.6091	4.8248	224.8030	225.4121
	Web	4.7508	4.9400	23.4690	31.2185	0.0502	0.0120	31.2304
2	Horizontal Legs	6.7188	0.3125	2.0996	0.2187	4.6777	147.0117	147.2304
	Vertical Legs	7.5000	3.0000	22.5000	22.5000	1.9902	29.7065	52.2065
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	4.4902	0.0000	0.0000
<b>Total</b>		<b>28.63</b>		<b>142.85</b>	<b>54.55</b>		<b>401.53</b>	<b>456.08</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	4.9902 in	S <sub>top</sub> =	86.71 in <sup>3</sup>	y-bar =	4.9902 in	S <sub>top</sub> =	86.71 in <sup>3</sup>
I <sub>x</sub> =	456.08 in <sup>4</sup>	S <sub>bottom</sub> =	91.40 in <sup>3</sup>	I <sub>x</sub> =	456.08 in <sup>4</sup>	S <sub>bottom</sub> =	91.40 in <sup>3</sup>
C <sub>top</sub> =	5.2598 in	A =	28.6266 in <sup>2</sup>	C <sub>top</sub> =	5.2598 in	A =	28.6266 in <sup>2</sup>
C <sub>bottom</sub> =	4.9902 in	r <sub>x</sub> =	3.9915 in	C <sub>bottom</sub> =	4.9902 in	r <sub>x</sub> =	3.9915 in
J =	4.7411 in <sup>4</sup>	Z =	104.16 in <sup>3</sup>	Z =	104.16		in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6570	6.2675	60.5252	99.1532	0.0000	0.0000	99.1532
	Web		4.7508	6.2675	29.7756	0.1133	0.0000	0.0000	0.1133
2 (Left)	Horizontal Leg		3.3594	2.6875	9.0283	8.0879	3.5800	43.0551	51.1430
	Vertical Leg		3.7500	5.6875	21.3281	0.1221	0.5800	1.2615	1.3836
2 (Right)	Horizontal Leg		3.3594	9.8475	33.0814	8.0879	3.5800	43.0551	51.1430
	Vertical Leg		3.7500	6.8475	25.6781	0.1221	0.5800	1.2615	1.3836
3	Additional Plate		0.0000	6.2675	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>28.63</b>		<b>179.42</b>	<b>115.69</b>		<b>88.63</b>	<b>204.32</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.2675 in	S <sub>right</sub> =	32.60 in <sup>3</sup>	x-bar =	6.2675 in	S <sub>right</sub> =	32.60 in <sup>3</sup>
I <sub>y</sub> =	204.32 in <sup>4</sup>	S <sub>left</sub> =	32.60 in <sup>3</sup>	I <sub>y</sub> =	204.32 in <sup>4</sup>	S <sub>left</sub> =	32.60 in <sup>3</sup>
C <sub>right</sub> =	6.2675 in	A =	28.6266 in <sup>2</sup>	C <sub>right</sub> =	6.2675 in	A =	28.6266 in <sup>2</sup>
C <sub>left</sub> =	6.2675 in	r <sub>y</sub> =	2.6716 in	C <sub>left</sub> =	6.2675 in	r <sub>y</sub> =	2.6716 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	312.48 k-ft	312.48 k-ft
V	239.48 k	239.48 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





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Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x97	<b>Bottom Angles:</b>	
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8700 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	9.7500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5350 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	10.2500 in
$B_3 = t =$	0.5350 in	$Gap =$	0.5000 in

\*select from dropdown list

**Coped Stringer S4-9 @ FB C8**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6570	9.8150	94.7835	0.6091	4.0793	160.7010	161.3101
	Web	4.7508	4.9400	23.4690	31.2185	0.7957	3.0077	34.2262
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.4857	105.3243	105.3972
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	2.7357	44.9036	62.9036
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.2357	0.0000	0.0000
<b>Total</b>		<b>23.91</b>		<b>137.13</b>	<b>49.90</b>		<b>313.94</b>	<b>363.84</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	5.7357 in	S <sub>top</sub> =	80.60 in <sup>3</sup>	y-bar =	5.7357 in	S <sub>top</sub> =	80.60 in <sup>3</sup>
I <sub>x</sub> =	363.84 in <sup>4</sup>	S <sub>bot.</sub> =	63.43 in <sup>3</sup>	I <sub>x</sub> =	363.84 in <sup>4</sup>	S <sub>bot.</sub> =	63.43 in <sup>3</sup>
C <sub>top</sub> =	4.5143 in	A =	23.9078 in <sup>2</sup>	C <sub>top</sub> =	4.5143 in	A =	23.9078 in <sup>2</sup>
C <sub>bottom</sub> =	5.7357 in	r <sub>x</sub> =	3.9011 in	C <sub>bottom</sub> =	5.7357 in	r <sub>x</sub> =	3.9011 in
J =	3.6814 in <sup>4</sup>	Z =	85.96 in <sup>3</sup>	Z =	85.96 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6570	4.2675	41.2112	99.1532	1.2825	15.8839	115.0371
	Web		4.7508	4.2675	20.2740	0.1133	1.2825	7.8141	7.9275
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.8000	25.2700	27.0565
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.8000	9.7200	9.7825
2 (Right)	Horizontal Leg		1.7500	6.7850	11.8738	1.7865	1.2350	2.6691	4.4556
	Vertical Leg		3.0000	4.7850	14.3550	0.0625	0.7650	1.7557	1.8182
3	Additional Plate		0.0000	4.2675	0.0000	0.0000	1.2825	0.0000	0.0000
<b>Total</b>			<b>23.91</b>		<b>102.03</b>	<b>102.96</b>		<b>63.11</b>	<b>166.08</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.5500 in	S <sub>right</sub> =	29.92 in <sup>3</sup>	x-bar =	5.5500 in	S <sub>right</sub> =	29.92 in <sup>3</sup>
I <sub>y</sub> =	166.08 in <sup>4</sup>	S <sub>left</sub> =	29.92 in <sup>3</sup>	I <sub>y</sub> =	166.08 in <sup>4</sup>	S <sub>left</sub> =	29.92 in <sup>3</sup>
C <sub>right</sub> =	5.5500 in	A =	23.9078 in <sup>2</sup>	C <sub>right</sub> =	5.5500 in	A =	23.9078 in <sup>2</sup>
C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.6356 in	C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.6356 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	257.88 k-ft	257.88 k-ft
V	214.04 k	214.04 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x86	<b>Bottom Angles:</b>	
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7700 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	11.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.4800 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	12.0000 in
$B_3 = t =$	0.4800 in	$Gap =$	0.5000 in

\*select from dropdown list

**Coped Stringer S5-9 @ FB C5**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	8.5470	11.6150	99.2734	0.4223	5.2196	232.8608	233.2831
	Web	5.1504	5.8650	30.2071	49.4150	0.5304	1.4487	50.8637
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.1454	132.1787	132.2516
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.3954	69.1704	87.1704
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.8954	0.0000	0.0000
<b>Total</b>		<b>23.20</b>		<b>148.36</b>	<b>67.91</b>		<b>435.66</b>	<b>503.57</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	6.3954	in	S <sub>top</sub> =	89.85	in <sup>3</sup>	y-bar =	6.3954	in	S <sub>top</sub> =	89.85	in <sup>3</sup>
I <sub>x</sub> =	503.57	in <sup>4</sup>	S <sub>bott.</sub> =	78.74	in <sup>3</sup>	I <sub>x</sub> =	503.57	in <sup>4</sup>	S <sub>bott.</sub> =	78.74	in <sup>3</sup>
C <sub>top</sub> =	5.6046	in	A =	23.1974	in <sup>2</sup>	C <sub>top</sub> =	5.6046	in	A =	23.1974	in <sup>2</sup>
C <sub>bottom</sub> =	6.3954	in	r <sub>x</sub> =	4.6592	in	C <sub>bottom</sub> =	6.3954	in	r <sub>x</sub> =	4.6592	in
J =	2.8764	in <sup>4</sup>	Z =	99.74	in <sup>3</sup>	Z =	99.74	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		8.5470	4.2400	36.2393	87.7563	1.3100	14.6675	102.4238
	Web		5.1504	4.2400	21.8377	0.0989	1.3100	8.8386	8.9375
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.8000	25.2700	27.0565
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.8000	9.7200	9.7825
2 (Right)	Horizontal Leg		1.7500	6.7300	11.7775	1.7865	1.1800	2.4367	4.2232
	Vertical Leg		3.0000	4.7300	14.1900	0.0625	0.8200	2.0172	2.0797
3	Additional Plate		0.0000	4.2400	0.0000	0.0000	1.3100	0.0000	0.0000
<b>Total</b>			<b>23.20</b>		<b>98.36</b>	<b>91.55</b>		<b>62.95</b>	<b>154.50</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.5500	in	S <sub>right</sub> =	27.84	in <sup>3</sup>	x-bar =	5.5500	in	S <sub>right</sub> =	27.84	in <sup>3</sup>
I <sub>y</sub> =	154.50	n <sup>4</sup>	S <sub>left</sub> =	27.84	in <sup>3</sup>	I <sub>y</sub> =	154.50	n <sup>4</sup>	S <sub>left</sub> =	27.84	in <sup>3</sup>
C <sub>right</sub> =	5.5500	in	A =	23.1974	in <sup>2</sup>	C <sub>right</sub> =	5.5500	in	A =	23.1974	in <sup>2</sup>
C <sub>left</sub> =	5.5500	in	r <sub>y</sub> =	2.5808	in	C <sub>left</sub> =	5.5500	in	r <sub>y</sub> =	2.5808	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	299.22 k-ft	299.22 k-ft
V	222.38 k	222.38 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x86	<b>Bottom Angles:</b>	
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7700 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	10.5000 in	$C_2 = t =$	0.6250 in
$D_1 = t_w =$	0.4800 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	11.0000 in
$B_3 = t =$	0.4800 in	$Gap =$	0.5000 in

\*select from dropdown list

**Coped Stringer S5-9 @ FB C6**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	8.5470	10.6150	90.7264	0.4223	5.0166	215.0999	215.5222
	Web	4.6704	5.3650	25.0567	36.8467	0.2334	0.2543	37.1010
2	Horizontal Legs	4.2188	0.3125	1.3184	0.1373	5.2859	117.8731	118.0104
	Vertical Legs	7.5000	3.0000	22.5000	22.5000	2.5984	50.6359	73.1359
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.0984	0.0000	0.0000
<b>Total</b>		<b>24.94</b>		<b>139.60</b>	<b>59.91</b>		<b>383.86</b>	<b>443.77</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	5.5984 in	S <sub>top</sub> =	82.15 in <sup>3</sup>	y-bar =	5.5984 in	S <sub>top</sub> =	82.15 in <sup>3</sup>
I <sub>x</sub> =	443.77 in <sup>4</sup>	S <sub>bott.</sub> =	79.27 in <sup>3</sup>	I <sub>x</sub> =	443.77 in <sup>4</sup>	S <sub>bott.</sub> =	79.27 in <sup>3</sup>
C <sub>top</sub> =	5.4016 in	A =	24.9362 in <sup>2</sup>	C <sub>top</sub> =	5.4016 in	A =	24.9362 in <sup>2</sup>
C <sub>bottom</sub> =	5.5984 in	r <sub>x</sub> =	4.2186 in	C <sub>bottom</sub> =	5.5984 in	r <sub>x</sub> =	4.2186 in
J =	3.5737 in <sup>4</sup>	Z =	95.43 in <sup>3</sup>	Z =	95.43 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		8.5470	4.2400	36.2393	87.7563	1.3100	14.6675	102.4238
	Web		4.6704	4.2400	19.8025	0.0897	1.3100	8.0149	8.1045
2 (Left)	Horizontal Leg		2.1094	1.6875	3.5596	2.0023	3.8625	31.4696	33.4718
	Vertical Leg		3.7500	3.6875	13.8281	0.1221	1.8625	13.0084	13.1305
2 (Right)	Horizontal Leg		2.1094	6.7925	14.3279	2.0023	1.2425	3.2565	5.2587
	Vertical Leg		3.7500	4.7925	17.9719	0.1221	0.7575	2.1518	2.2738
3	Additional Plate		0.0000	4.2400	0.0000	0.0000	1.3100	0.0000	0.0000
<b>Total</b>			<b>24.94</b>		<b>105.73</b>	<b>92.09</b>		<b>72.57</b>	<b>164.66</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.5500 in	S <sub>right</sub> =	29.67 in <sup>3</sup>	x-bar =	5.5500 in	S <sub>right</sub> =	29.67 in <sup>3</sup>
I <sub>y</sub> =	164.66 in <sup>4</sup>	S <sub>left</sub> =	29.67 in <sup>3</sup>	I <sub>y</sub> =	164.66 in <sup>4</sup>	S <sub>left</sub> =	29.67 in <sup>3</sup>
C <sub>right</sub> =	5.5500 in	A =	24.9362 in <sup>2</sup>	C <sub>right</sub> =	5.5500 in	A =	24.9362 in <sup>2</sup>
C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.5697 in	C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.5697 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	286.29 k-ft	286.29 k-ft
V	237.81 k	237.81 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x86	<b>Bottom Angles:</b>	
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7700 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	10.5000 in	$C_2 = t =$	0.6250 in
$D_1 = t_w =$	0.4800 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	11.0000 in
$B_3 = t =$	0.4800 in	$Gap =$	0.5000 in

\*select from dropdown list

Coped Stringer S5-9 @ FB C7

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	8.5470	10.6150	90.7264	0.4223	5.0166	215.0999	215.5222
	Web	4.6704	5.3650	25.0567	36.8467	0.2334	0.2543	37.1010
2	Horizontal Legs	4.2188	0.3125	1.3184	0.1373	5.2859	117.8731	118.0104
	Vertical Legs	7.5000	3.0000	22.5000	22.5000	2.5984	50.6359	73.1359
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.0984	0.0000	0.0000
<b>Total</b>		<b>24.94</b>		<b>139.60</b>	<b>59.91</b>		<b>383.86</b>	<b>443.77</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	5.5984 in	S <sub>top</sub> =	82.15 in <sup>3</sup>	y-bar =	5.5984 in	S <sub>top</sub> =	82.15 in <sup>3</sup>
I <sub>x</sub> =	443.77 in <sup>4</sup>	S <sub>bott.</sub> =	79.27 in <sup>3</sup>	I <sub>x</sub> =	443.77 in <sup>4</sup>	S <sub>bott.</sub> =	79.27 in <sup>3</sup>
C <sub>top</sub> =	5.4016 in	A =	24.9362 in <sup>2</sup>	C <sub>top</sub> =	5.4016 in	A =	24.9362 in <sup>2</sup>
C <sub>bottom</sub> =	5.5984 in	r <sub>x</sub> =	4.2186 in	C <sub>bottom</sub> =	5.5984 in	r <sub>x</sub> =	4.2186 in
J =	3.5737 in <sup>4</sup>	Z =	95.43 in <sup>3</sup>	Z =	95.43 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		8.5470	4.2400	36.2393	87.7563	1.3100	14.6675	102.4238
	Web		4.6704	4.2400	19.8025	0.0897	1.3100	8.0149	8.1045
2 (Left)	Horizontal Leg		2.1094	1.6875	3.5596	2.0023	3.8625	31.4696	33.4718
	Vertical Leg		3.7500	3.6875	13.8281	0.1221	1.8625	13.0084	13.1305
2 (Right)	Horizontal Leg		2.1094	6.7925	14.3279	2.0023	1.2425	3.2565	5.2587
	Vertical Leg		3.7500	4.7925	17.9719	0.1221	0.7575	2.1518	2.2738
3	Additional Plate		0.0000	4.2400	0.0000	0.0000	1.3100	0.0000	0.0000
<b>Total</b>			<b>24.94</b>		<b>105.73</b>	<b>92.09</b>		<b>72.57</b>	<b>164.66</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.5500 in	S <sub>right</sub> =	29.67 in <sup>3</sup>	x-bar =	5.5500 in	S <sub>right</sub> =	29.67 in <sup>3</sup>
I <sub>y</sub> =	164.66 in <sup>4</sup>	S <sub>left</sub> =	29.67 in <sup>3</sup>	I <sub>y</sub> =	164.66 in <sup>4</sup>	S <sub>left</sub> =	29.67 in <sup>3</sup>
C <sub>right</sub> =	5.5500 in	A =	24.9362 in <sup>2</sup>	C <sub>right</sub> =	5.5500 in	A =	24.9362 in <sup>2</sup>
C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.5697 in	C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.5697 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	286.29 k-ft	286.29 k-ft
V	237.81 k	237.81 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x86	<b>Bottom Angles:</b>	
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7700 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	10.2500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.4800 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	10.7500 in
$B_3 = t =$	0.4800 in	$Gap =$	0.5000 in

\*select from dropdown list

Coped Stringer S5-9 @ FB C8

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	8.5470	10.3650	88.5897	0.4223	4.5542	177.2718	177.6941
	Web	4.5504	5.2400	23.8441	34.0789	0.5708	1.4825	35.5614
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.5608	108.2284	108.3013
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	2.8108	47.4033	65.4033
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.3108	0.0000	0.0000
<b>Total</b>		<b>22.60</b>		<b>131.31</b>	<b>52.57</b>		<b>334.39</b>	<b>386.96</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	5.8108	in	S <sub>top</sub> =	78.34	in <sup>3</sup>	y-bar =	5.8108	in	S <sub>top</sub> =	78.34	in <sup>3</sup>
I <sub>x</sub> =	386.96	in <sup>4</sup>	S <sub>bott.</sub> =	66.59	in <sup>3</sup>	I <sub>x</sub> =	386.96	in <sup>4</sup>	S <sub>bott.</sub> =	66.59	in <sup>3</sup>
C <sub>top</sub> =	4.9392	in	A =	22.5974	in <sup>2</sup>	C <sub>top</sub> =	4.9392	in	A =	22.5974	in <sup>2</sup>
C <sub>bottom</sub> =	5.8108	in	r <sub>x</sub> =	4.1381	in	C <sub>bottom</sub> =	5.8108	in	r <sub>x</sub> =	4.1381	in
J =	2.8303	in <sup>4</sup>	Z =	86.02	in <sup>3</sup>	Z =	86.02	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	8.5470	4.2400	36.2393	87.7563	1.3100	14.6675	102.4238
	Web	4.5504	4.2400	19.2937	0.0874	1.3100	7.8089	7.8963
2 (Left)	Horizontal Leg	1.7500	1.7500	3.0625	1.7865	3.8000	25.2700	27.0565
	Vertical Leg	3.0000	3.7500	11.2500	0.0625	1.8000	9.7200	9.7825
2 (Right)	Horizontal Leg	1.7500	6.7300	11.7775	1.7865	1.1800	2.4367	4.2232
	Vertical Leg	3.0000	4.7300	14.1900	0.0625	0.8200	2.0172	2.0797
3	Additional Plate	0.0000	4.2400	0.0000	0.0000	1.3100	0.0000	0.0000
<b>Total</b>		<b>22.60</b>		<b>95.81</b>	<b>91.54</b>		<b>61.92</b>	<b>153.46</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.5500	in	S <sub>right</sub> =	27.65	in <sup>3</sup>	x-bar =	5.5500	in	S <sub>right</sub> =	27.65	in <sup>3</sup>
I <sub>y</sub> =	153.46	in <sup>4</sup>	S <sub>left</sub> =	27.65	in <sup>3</sup>	I <sub>y</sub> =	153.46	in <sup>4</sup>	S <sub>left</sub> =	27.65	in <sup>3</sup>
C <sub>right</sub> =	5.5500	in	A =	22.5974	in <sup>2</sup>	C <sub>right</sub> =	5.5500	in	A =	22.5974	in <sup>2</sup>
C <sub>left</sub> =	5.5500	in	r <sub>y</sub> =	2.6060	in	C <sub>left</sub> =	5.5500	in	r <sub>y</sub> =	2.6060	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	258.06 k-ft	258.06 k-ft
V	209.85 k	209.85 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



Made By CTG  
Checked By DMP

Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x97	<b>Bottom Angles:</b>
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.8700 in	$B_2 = L_h =$ 4.0000 in
$C_1 = d =$	10.7500 in	$C_2 = t =$ 0.5000 in
$D_1 = t_w =$	0.5350 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	H = 11.2500 in
$B_3 = t =$	0.5350 in	Gap = 0.5000 in

\*select from dropdown list

Coped Stringer S6-9 @ FB C5

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6570	10.8150	104.4405	0.6091	4.5935	203.7675	204.3766
	Web	5.2858	5.4400	28.7548	42.9975	0.7815	3.2280	46.2256
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.9715	124.8047	124.8776
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.2215	62.2673	80.2673
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.7215	0.0000	0.0000
<b>Total</b>		<b>24.44</b>		<b>152.07</b>	<b>61.68</b>		<b>394.07</b>	<b>455.75</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.2215 in	S <sub>top</sub> =	90.63 in <sup>3</sup>	y-bar =	6.2215 in	S <sub>top</sub> =	90.63 in <sup>3</sup>
I <sub>x</sub> =	455.75 in <sup>4</sup>	S <sub>bott.</sub> =	73.25 in <sup>3</sup>	I <sub>x</sub> =	455.75 in <sup>4</sup>	S <sub>bott.</sub> =	73.25 in <sup>3</sup>
C <sub>top</sub> =	5.0285 in	A =	24.4428 in <sup>2</sup>	C <sub>top</sub> =	5.0285 in	A =	24.4428 in <sup>2</sup>
C <sub>bottom</sub> =	6.2215 in	r <sub>x</sub> =	4.3180 in	C <sub>bottom</sub> =	6.2215 in	r <sub>x</sub> =	4.3180 in
J =	3.7324 in <sup>4</sup>	Z =	97.82 in <sup>3</sup>	Z =	97.82 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6570	4.2675	41.2112	99.1532	1.2825	15.8839	115.0371
	Web		5.2858	4.2675	22.5572	0.1261	1.2825	8.6941	8.8202
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.8000	25.2700	27.0565
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.8000	9.7200	9.7825
2 (Right)	Horizontal Leg		1.7500	6.7850	11.8738	1.7865	1.2350	2.6691	4.4556
	Vertical Leg		3.0000	4.7850	14.3550	0.0625	0.7650	1.7557	1.8182
3	Additional Plate		0.0000	4.2675	0.0000	0.0000	1.2825	0.0000	0.0000
<b>Total</b>			<b>24.44</b>		<b>104.31</b>	<b>102.98</b>		<b>63.99</b>	<b>166.97</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.5500 in	S <sub>right</sub> =	30.08 in <sup>3</sup>	x-bar =	5.5500 in	S <sub>right</sub> =	30.08 in <sup>3</sup>
I <sub>y</sub> =	166.97 in <sup>4</sup>	S <sub>left</sub> =	30.08 in <sup>3</sup>	I <sub>y</sub> =	166.97 in <sup>4</sup>	S <sub>left</sub> =	30.08 in <sup>3</sup>
C <sub>right</sub> =	5.5500 in	A =	24.4428 in <sup>2</sup>	C <sub>right</sub> =	5.5500 in	A =	24.4428 in <sup>2</sup>
C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.6136 in	C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.6136 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	293.46 k-ft	293.46 k-ft
V	225.21 k	225.21 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x97	<b>Bottom Angles:</b>
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.8700 in	$B_2 = L_h =$ 4.0000 in
$C_1 = d =$	10.0000 in	$C_2 = t =$ 0.7500 in
$D_1 = t_w =$	0.5350 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	H = 10.5000 in
$B_3 = t =$	0.5350 in	Gap = 0.5000 in

\*select from dropdown list

**Coped Stringer S6-9 @ FB C6**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6570	10.0650	97.1977	0.6091	4.7594	218.7518	219.3609
	Web		4.8846	5.0650	24.7402	33.9301	0.2406	0.2827	34.2128
2	Horizontal Legs		4.8750	0.3750	1.8281	0.2285	4.9306	118.5139	118.7424
	Vertical Legs		9.0000	3.0000	27.0000	27.0000	2.3056	47.8410	74.8410
3	Additional Plate		0.0000	0.5000	0.0000	0.0000	4.8056	0.0000	0.0000
<b>Total</b>			<b>28.42</b>		<b>150.77</b>	<b>61.77</b>		<b>385.39</b>	<b>447.16</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties					As-Inspected Section Properties						
y-bar =	5.3056	in	S <sub>top</sub> =	86.08	in <sup>3</sup>	y-bar =	5.3056	in	S <sub>top</sub> =	86.08	in <sup>3</sup>
I <sub>x</sub> =	447.16	in <sup>4</sup>	S <sub>bottom</sub> =	84.28	in <sup>3</sup>	I <sub>x</sub> =	447.16	in <sup>4</sup>	S <sub>bottom</sub> =	84.28	in <sup>3</sup>
C <sub>top</sub> =	5.1944	in	A =	28.4166	in <sup>2</sup>	C <sub>top</sub> =	5.1944	in	A =	28.4166	in <sup>2</sup>
C <sub>bottom</sub> =	5.3056	in	r <sub>x</sub> =	3.9668	in	C <sub>bottom</sub> =	5.3056	in	r <sub>x</sub> =	3.9668	in
J =	5.5041	in <sup>4</sup>	Z =	101.95	in <sup>3</sup>	Z =	101.95	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6570	4.2675	41.2112	99.1532	1.2825	15.8839	115.0371
	Web		4.8846	4.2675	20.8448	0.1165	1.2825	8.0341	8.1506
2 (Left)	Horizontal Leg		2.4375	1.6250	3.9609	2.1455	3.9250	37.5512	39.6967
	Vertical Leg		4.5000	3.6250	16.3125	0.2109	1.9250	16.6753	16.8863
2 (Right)	Horizontal Leg		2.4375	6.9100	16.8431	2.1455	1.3600	4.5084	6.6539
	Vertical Leg		4.5000	4.9100	22.0950	0.2109	0.6400	1.8432	2.0541
3	Additional Plate		0.0000	4.2675	0.0000	0.0000	1.2825	0.0000	0.0000
<b>Total</b>			<b>28.42</b>		<b>121.27</b>	<b>103.98</b>		<b>84.50</b>	<b>188.48</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	5.5500	in	S <sub>right</sub> =	33.96	in <sup>3</sup>	x-bar =	5.5500	in	S <sub>right</sub> =	33.96	in <sup>3</sup>
I <sub>y</sub> =	188.48	in <sup>4</sup>	S <sub>left</sub> =	33.96	in <sup>3</sup>	I <sub>y</sub> =	188.48	in <sup>4</sup>	S <sub>left</sub> =	33.96	in <sup>3</sup>
C <sub>right</sub> =	5.5500	in	A =	28.4166	in <sup>2</sup>	C <sub>right</sub> =	5.5500	in	A =	28.4166	in <sup>2</sup>
C <sub>left</sub> =	5.5500	in	r <sub>y</sub> =	2.5754	in	C <sub>left</sub> =	5.5500	in	r <sub>y</sub> =	2.5754	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	305.85 k-ft	305.85 k-ft
V	266.42 k	266.42 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x97	<b>Bottom Angles:</b>	
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8700 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	9.7500 in	$C_2 = t =$	0.7500 in
$D_1 = t_w =$	0.5350 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	10.2500 in
$B_3 = t =$	0.5350 in	$Gap =$	0.5000 in

\*select from dropdown list

**Coped Stringer S6-9 @ FB C7**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6570	9.8150	94.7835	0.6091	4.6146	205.6455	206.2546
	Web		4.7508	4.9400	23.4690	31.2185	0.2604	0.3220	31.5405
2	Horizontal Legs		4.8750	0.3750	1.8281	0.2285	4.8254	113.5096	113.7381
	Vertical Legs		9.0000	3.0000	27.0000	27.0000	2.2004	43.5740	70.5740
3	Additional Plate		0.0000	0.5000	0.0000	0.0000	4.7004	0.0000	0.0000
<b>Total</b>			<b>28.28</b>		<b>147.08</b>	<b>59.06</b>		<b>363.05</b>	<b>422.11</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties					As-Inspected Section Properties						
y-bar =	5.2004	in	S <sub>top</sub> =	83.59	in <sup>3</sup>	y-bar =	5.2004	in	S <sub>top</sub> =	83.59	in <sup>3</sup>
I <sub>x</sub> =	422.11	in <sup>4</sup>	S <sub>bottom</sub> =	81.17	in <sup>3</sup>	I <sub>x</sub> =	422.11	in <sup>4</sup>	S <sub>bottom</sub> =	81.17	in <sup>3</sup>
C <sub>top</sub> =	5.0496	in	A =	28.2828	in <sup>2</sup>	C <sub>top</sub> =	5.0496	in	A =	28.2828	in <sup>2</sup>
C <sub>bottom</sub> =	5.2004	in	r <sub>x</sub> =	3.8632	in	C <sub>bottom</sub> =	5.2004	in	r <sub>x</sub> =	3.8632	in
J =	5.4913	in <sup>4</sup>	Z =	98.89	in <sup>3</sup>	Z =	98.89	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6570	4.2675	41.2112	99.1532	1.2825	15.8839	115.0371
	Web		4.7508	4.2675	20.2740	0.1133	1.2825	7.8141	7.9275
2 (Left)	Horizontal Leg		2.4375	1.6250	3.9609	2.1455	3.9250	37.5512	39.6967
	Vertical Leg		4.5000	3.6250	16.3125	0.2109	1.9250	16.6753	16.8863
2 (Right)	Horizontal Leg		2.4375	6.9100	16.8431	2.1455	1.3600	4.5084	6.6539
	Vertical Leg		4.5000	4.9100	22.0950	0.2109	0.6400	1.8432	2.0541
3	Additional Plate		0.0000	4.2675	0.0000	0.0000	1.2825	0.0000	0.0000
<b>Total</b>			<b>28.28</b>		<b>120.70</b>	<b>103.98</b>		<b>84.28</b>	<b>188.26</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	5.5500	in	S <sub>right</sub> =	33.92	in <sup>3</sup>	x-bar =	5.5500	in	S <sub>right</sub> =	33.92	in <sup>3</sup>
I <sub>y</sub> =	188.26	in <sup>4</sup>	S <sub>left</sub> =	33.92	in <sup>3</sup>	I <sub>y</sub> =	188.26	in <sup>4</sup>	S <sub>left</sub> =	33.92	in <sup>3</sup>
C <sub>right</sub> =	5.5500	in	A =	28.2828	in <sup>2</sup>	C <sub>right</sub> =	5.5500	in	A =	28.2828	in <sup>2</sup>
C <sub>left</sub> =	5.5500	in	r <sub>y</sub> =	2.5800	in	C <sub>left</sub> =	5.5500	in	r <sub>y</sub> =	2.5800	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	296.67 k-ft	296.67 k-ft
V	263.63 k	263.63 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section





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Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x97	<b>Bottom Angles:</b>
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.8700 in	$B_2 = L_h =$ 4.0000 in
$C_1 = d =$	9.7500 in	$C_2 = t =$ 0.5000 in
$D_1 = t_w =$	0.5350 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	$H =$ 10.2500 in
$B_3 = t =$	0.5350 in	$Gap =$ 0.5000 in

\*select from dropdown list

**Coped Stringer S6-9 @ FB C8**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6570	9.8150	94.7835	0.6091	4.0793	160.7010	161.3101
	Web	4.7508	4.9400	23.4690	31.2185	0.7957	3.0077	34.2262
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.4857	105.3243	105.3972
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	2.7357	44.9036	62.9036
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.2357	0.0000	0.0000
<b>Total</b>		<b>23.91</b>		<b>137.13</b>	<b>49.90</b>		<b>313.94</b>	<b>363.84</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	5.7357 in	S <sub>top</sub> =	80.60 in <sup>3</sup>	y-bar =	5.7357 in	S <sub>top</sub> =	80.60 in <sup>3</sup>
I <sub>x</sub> =	363.84 in <sup>4</sup>	S <sub>bot.</sub> =	63.43 in <sup>3</sup>	I <sub>x</sub> =	363.84 in <sup>4</sup>	S <sub>bot.</sub> =	63.43 in <sup>3</sup>
C <sub>top</sub> =	4.5143 in	A =	23.9078 in <sup>2</sup>	C <sub>top</sub> =	4.5143 in	A =	23.9078 in <sup>2</sup>
C <sub>bottom</sub> =	5.7357 in	r <sub>x</sub> =	3.9011 in	C <sub>bottom</sub> =	5.7357 in	r <sub>x</sub> =	3.9011 in
J =	3.6814 in <sup>4</sup>	Z =	85.96 in <sup>3</sup>	Z =	85.96 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6570	4.2675	41.2112	99.1532	1.2825	15.8839	115.0371
	Web		4.7508	4.2675	20.2740	0.1133	1.2825	7.8141	7.9275
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.8000	25.2700	27.0565
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.8000	9.7200	9.7825
2 (Right)	Horizontal Leg		1.7500	6.7850	11.8738	1.7865	1.2350	2.6691	4.4556
	Vertical Leg		3.0000	4.7850	14.3550	0.0625	0.7650	1.7557	1.8182
3	Additional Plate		0.0000	4.2675	0.0000	0.0000	1.2825	0.0000	0.0000
<b>Total</b>			<b>23.91</b>		<b>102.03</b>	<b>102.96</b>		<b>63.11</b>	<b>166.08</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.5500 in	S <sub>right</sub> =	29.92 in <sup>3</sup>	x-bar =	5.5500 in	S <sub>right</sub> =	29.92 in <sup>3</sup>
I <sub>y</sub> =	166.08 in <sup>4</sup>	S <sub>left</sub> =	29.92 in <sup>3</sup>	I <sub>y</sub> =	166.08 in <sup>4</sup>	S <sub>left</sub> =	29.92 in <sup>3</sup>
C <sub>right</sub> =	5.5500 in	A =	23.9078 in <sup>2</sup>	C <sub>right</sub> =	5.5500 in	A =	23.9078 in <sup>2</sup>
C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.6356 in	C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.6356 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	257.88 k-ft	257.88 k-ft
V	214.04 k	214.04 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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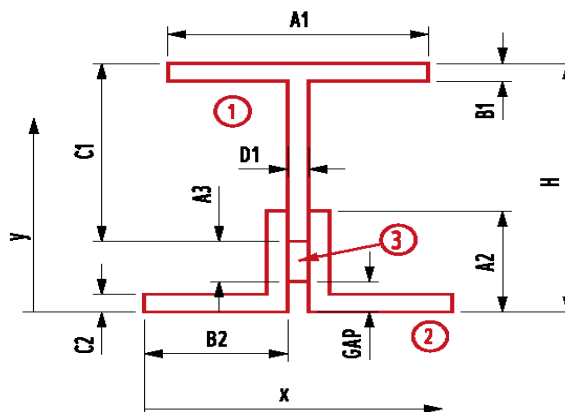
Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x97	<b>Bottom Angles:</b>	
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8700 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	11.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5350 in		



**Additional Plate:**

$A_3 = d =$	0.0000 in
$B_3 = t =$	0.5350 in

**Miscellaneous:**

$H =$	12.0000 in
$Gap =$	0.5000 in

\*select from dropdown list

Coped Stringer S7-9 @ FB C5

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6570	11.5650	111.6832	0.6091	4.9788	239.3800	239.9892
	Web	5.6871	5.8150	33.0702	53.5516	0.7712	3.3826	56.9341
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.3362	140.5169	140.5898
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.5862	77.1659	95.1659
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.0862	0.0000	0.0000
<b>Total</b>		<b>24.84</b>		<b>163.63</b>	<b>72.23</b>		<b>460.45</b>	<b>532.68</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.5862 in	S <sub>top</sub> =	98.39 in <sup>3</sup>	y-bar =	6.5862 in	S <sub>top</sub> =	98.39 in <sup>3</sup>
I <sub>x</sub> =	532.68 in <sup>4</sup>	S <sub>bott.</sub> =	80.88 in <sup>3</sup>	I <sub>x</sub> =	532.68 in <sup>4</sup>	S <sub>bott.</sub> =	80.88 in <sup>3</sup>
C <sub>top</sub> =	5.4138 in	A =	24.8441 in <sup>2</sup>	C <sub>top</sub> =	5.4138 in	A =	24.8441 in <sup>2</sup>
C <sub>bottom</sub> =	6.5862 in	r <sub>x</sub> =	4.6304 in	C <sub>bottom</sub> =	6.5862 in	r <sub>x</sub> =	4.6304 in
J =	3.7707 in <sup>4</sup>	Z =	107.00 in <sup>3</sup>			Z =	107.00 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6570	4.2675	41.2112	99.1532	1.2825	15.8839	115.0371
	Web	5.6871	4.2675	24.2695	0.1356	1.2825	9.3541	9.4897
2 (Left)	Horizontal Leg	1.7500	1.7500	3.0625	1.7865	3.8000	25.2700	27.0565
	Vertical Leg	3.0000	3.7500	11.2500	0.0625	1.8000	9.7200	9.7825
2 (Right)	Horizontal Leg	1.7500	6.7850	11.8738	1.7865	1.2350	2.6691	4.4556
	Vertical Leg	3.0000	4.7850	14.3550	0.0625	0.7650	1.7557	1.8182
3	Additional Plate	0.0000	4.2675	0.0000	0.0000	1.2825	0.0000	0.0000
<b>Total</b>		<b>24.84</b>		<b>106.02</b>	<b>102.99</b>		<b>64.65</b>	<b>167.64</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.5500 in	S <sub>right</sub> =	30.21 in <sup>3</sup>	x-bar =	5.5500 in	S <sub>right</sub> =	30.21 in <sup>3</sup>
I <sub>y</sub> =	167.64 in <sup>4</sup>	S <sub>left</sub> =	30.21 in <sup>3</sup>	I <sub>y</sub> =	167.64 in <sup>4</sup>	S <sub>left</sub> =	30.21 in <sup>3</sup>
C <sub>right</sub> =	5.5500 in	A =	24.8441 in <sup>2</sup>	C <sub>right</sub> =	5.5500 in	A =	24.8441 in <sup>2</sup>
C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.5976 in	C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.5976 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	321.00 k-ft	321.00 k-ft
V	233.59 k	233.59 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x97	<b>Bottom Angles:</b>	
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8700 in	$B_2 = L_h =$	6.0000 in
$C_1 = d =$	11.0000 in	$C_2 = t =$	0.6250 in
$D_1 = t_w =$	0.5350 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	11.5000 in
$B_3 = t =$	0.5350 in	$Gap =$	0.5000 in

\*select from dropdown list

Coped Stringer S7-9 @ FB C6

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6570	11.0650	106.8547	0.6091	5.5483	297.2749	297.8840
	Web	5.4196	5.5650	30.1598	46.3448	0.0483	0.0126	46.3574
2	Horizontal Legs	6.7188	0.3125	2.0996	0.2187	5.2042	181.9703	182.1890
	Vertical Legs	7.5000	3.0000	22.5000	22.5000	2.5167	47.5043	70.0043
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.0167	0.0000	0.0000
<b>Total</b>		<b>29.30</b>		<b>161.61</b>	<b>69.67</b>		<b>526.76</b>	<b>596.43</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	5.5167	in	S <sub>top</sub> =	99.68	in <sup>3</sup>	y-bar =	5.5167	in	S <sub>top</sub> =	99.68	in <sup>3</sup>
I <sub>x</sub> =	596.43	in <sup>4</sup>	S <sub>bottom</sub> =	108.11	in <sup>3</sup>	I <sub>x</sub> =	596.43	in <sup>4</sup>	S <sub>bottom</sub> =	108.11	in <sup>3</sup>
C <sub>top</sub> =	5.9833	in	A =	29.2953	in <sup>2</sup>	C <sub>top</sub> =	5.9833	in	A =	29.2953	in <sup>2</sup>
C <sub>bottom</sub> =	5.5167	in	r <sub>x</sub> =	4.5121	in	C <sub>bottom</sub> =	5.5167	in	r <sub>x</sub> =	4.5121	in
J =	4.8049	in <sup>4</sup>	Z =	119.91	in <sup>3</sup>	Z =	119.91	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6570	6.2675	60.5252	99.1532	0.0000	0.0000	99.1532
	Web		5.4196	6.2675	33.9670	0.1293	0.0000	0.0000	0.1293
2 (Left)	Horizontal Leg		3.3594	2.6875	9.0283	8.0879	3.5800	43.0551	51.1430
	Vertical Leg		3.7500	5.6875	21.3281	0.1221	0.5800	1.2615	1.3836
2 (Right)	Horizontal Leg		3.3594	9.8475	33.0814	8.0879	3.5800	43.0551	51.1430
	Vertical Leg		3.7500	6.8475	25.6781	0.1221	0.5800	1.2615	1.3836
3	Additional Plate		0.0000	6.2675	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>29.30</b>		<b>183.61</b>	<b>115.70</b>		<b>88.63</b>	<b>204.34</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	6.2675	in	S <sub>right</sub> =	32.60	in <sup>3</sup>	x-bar =	6.2675	in	S <sub>right</sub> =	32.60	in <sup>3</sup>
I <sub>y</sub> =	204.34	in <sup>4</sup>	S <sub>left</sub> =	32.60	in <sup>3</sup>	I <sub>y</sub> =	204.34	in <sup>4</sup>	S <sub>left</sub> =	32.60	in <sup>3</sup>
C <sub>right</sub> =	6.2675	in	A =	29.2953	in <sup>2</sup>	C <sub>right</sub> =	6.2675	in	A =	29.2953	in <sup>2</sup>
C <sub>left</sub> =	6.2675	in	r <sub>y</sub> =	2.6410	in	C <sub>left</sub> =	6.2675	in	r <sub>y</sub> =	2.6410	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	359.73 k-ft	359.73 k-ft
V	253.45 k	253.45 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x97	<b>Bottom Angles:</b>	
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8700 in	$B_2 = L_h =$	6.0000 in
$C_1 = d =$	10.5000 in	$C_2 = t =$	0.6250 in
$D_1 = t_w =$	0.5350 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	11.0000 in
$B_3 = t =$	0.5350 in	$Gap =$	0.5000 in

\*select from dropdown list

**Coped Stringer S7-9 @ FB C7**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6570	10.5650	102.0262	0.6091	5.2594	267.1283	267.7375
	Web	5.1521	5.3150	27.3831	39.8154	0.0094	0.0005	39.8159
2	Horizontal Legs	6.7188	0.3125	2.0996	0.2187	4.9931	167.5033	167.7220
	Vertical Legs	7.5000	3.0000	22.5000	22.5000	2.3056	39.8673	62.3673
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	4.8056	0.0000	0.0000
<b>Total</b>		<b>29.03</b>		<b>154.01</b>	<b>63.14</b>		<b>474.50</b>	<b>537.64</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	5.3056	in	S <sub>top</sub> =	94.42	in <sup>3</sup>	y-bar =	5.3056	in	S <sub>top</sub> =	94.42	in <sup>3</sup>
I <sub>x</sub> =	537.64	in <sup>4</sup>	S <sub>bott.</sub> =	101.34	in <sup>3</sup>	I <sub>x</sub> =	537.64	in <sup>4</sup>	S <sub>bott.</sub> =	101.34	in <sup>3</sup>
C <sub>top</sub> =	5.6944	in	A =	29.0278	in <sup>2</sup>	C <sub>top</sub> =	5.6944	in	A =	29.0278	in <sup>2</sup>
C <sub>bottom</sub> =	5.3056	in	r <sub>x</sub> =	4.3037	in	C <sub>bottom</sub> =	5.3056	in	r <sub>x</sub> =	4.3037	in
J =	4.7794	in <sup>4</sup>	Z =	113.53	in <sup>3</sup>	Z =	113.53	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6570	6.2675	60.5252	99.1532	0.0000	0.0000	99.1532
	Web		5.1521	6.2675	32.2905	0.1229	0.0000	0.0000	0.1229
2 (Left)	Horizontal Leg		3.3594	2.6875	9.0283	8.0879	3.5800	43.0551	51.1430
	Vertical Leg		3.7500	5.6875	21.3281	0.1221	0.5800	1.2615	1.3836
2 (Right)	Horizontal Leg		3.3594	9.8475	33.0814	8.0879	3.5800	43.0551	51.1430
	Vertical Leg		3.7500	6.8475	25.6781	0.1221	0.5800	1.2615	1.3836
3	Additional Plate		0.0000	6.2675	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>29.03</b>		<b>181.93</b>	<b>115.70</b>		<b>88.63</b>	<b>204.33</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	6.2675	in	S <sub>right</sub> =	32.60	in <sup>3</sup>	x-bar =	6.2675	in	S <sub>right</sub> =	32.60	in <sup>3</sup>
I <sub>y</sub> =	204.33	in <sup>4</sup>	S <sub>left</sub> =	32.60	in <sup>3</sup>	I <sub>y</sub> =	204.33	in <sup>4</sup>	S <sub>left</sub> =	32.60	in <sup>3</sup>
C <sub>right</sub> =	6.2675	in	A =	29.0278	in <sup>2</sup>	C <sub>right</sub> =	6.2675	in	A =	29.0278	in <sup>2</sup>
C <sub>left</sub> =	6.2675	in	r <sub>y</sub> =	2.6531	in	C <sub>left</sub> =	6.2675	in	r <sub>y</sub> =	2.6531	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	340.59 k-ft	340.59 k-ft
V	247.86 k	247.86 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x97	<b>Bottom Angles:</b>
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.8700 in	$B_2 = L_h =$ 4.0000 in
$C_1 = d =$	10.5000 in	$C_2 = t =$ 0.5000 in
$D_1 = t_w =$	0.5350 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	H = 11.0000 in
$B_3 = t =$	0.5350 in	Gap = 0.5000 in

\*select from dropdown list

**Coped Stringer S7-9 @ FB C8**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6570	10.5650	102.0262	0.6091	4.4650	192.5272	193.1363
	Web	5.1521	5.3150	27.3831	39.8154	0.7850	3.1745	42.9900
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.8500	119.7773	119.8502
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.1000	57.6587	75.6587
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.6000	0.0000	0.0000
<b>Total</b>		<b>24.31</b>		<b>148.28</b>	<b>58.50</b>		<b>373.14</b>	<b>431.64</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.1000 in	S <sub>top</sub> =	88.09 in <sup>3</sup>	y-bar =	6.1000 in	S <sub>top</sub> =	88.09 in <sup>3</sup>
I <sub>x</sub> =	431.64 in <sup>4</sup>	S <sub>bott.</sub> =	70.76 in <sup>3</sup>	I <sub>x</sub> =	431.64 in <sup>4</sup>	S <sub>bott.</sub> =	70.76 in <sup>3</sup>
C <sub>top</sub> =	4.9000 in	A =	24.3091 in <sup>2</sup>	C <sub>top</sub> =	4.9000 in	A =	24.3091 in <sup>2</sup>
C <sub>bottom</sub> =	6.1000 in	r <sub>x</sub> =	4.2138 in	C <sub>bottom</sub> =	6.1000 in	r <sub>x</sub> =	4.2138 in
J =	3.7197 in <sup>4</sup>	Z =	94.81 in <sup>3</sup>	Z =	94.81 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6570	4.2675	41.2112	99.1532	1.2825	15.8839	115.0371
	Web		5.1521	4.2675	21.9864	0.1229	1.2825	8.4741	8.5970
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.8000	25.2700	27.0565
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.8000	9.7200	9.7825
2 (Right)	Horizontal Leg		1.7500	6.7850	11.8738	1.7865	1.2350	2.6691	4.4556
	Vertical Leg		3.0000	4.7850	14.3550	0.0625	0.7650	1.7557	1.8182
3	Additional Plate		0.0000	4.2675	0.0000	0.0000	1.2825	0.0000	0.0000
<b>Total</b>			<b>24.31</b>		<b>103.74</b>	<b>102.97</b>		<b>63.77</b>	<b>166.75</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.5500 in	S <sub>right</sub> =	30.04 in <sup>3</sup>	x-bar =	5.5500 in	S <sub>right</sub> =	30.04 in <sup>3</sup>
I <sub>y</sub> =	166.75 in <sup>4</sup>	S <sub>left</sub> =	30.04 in <sup>3</sup>	I <sub>y</sub> =	166.75 in <sup>4</sup>	S <sub>left</sub> =	30.04 in <sup>3</sup>
C <sub>right</sub> =	5.5500 in	A =	24.3091 in <sup>2</sup>	C <sub>right</sub> =	5.5500 in	A =	24.3091 in <sup>2</sup>
C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.6191 in	C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.6191 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	284.43 k-ft	284.43 k-ft
V	222.41 k	222.41 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



Made By CTG  
Checked By DMP

Date 3/16/2012  
Date 3/26/2012

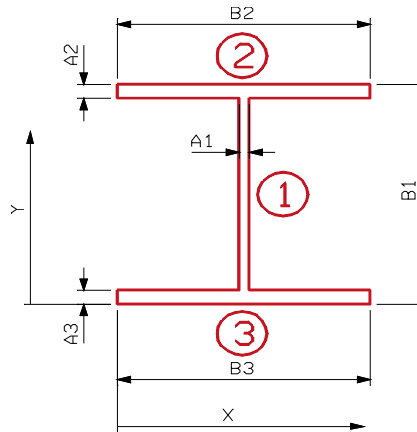
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 37.0313$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



Fascia Stringer F2A-9 Avg

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	13.3242	18.5156	246.7062	1401.7852	0.0000	0.0000	1401.7852
2	Top Flange	6.0000	36.6563	219.9375	0.2813	18.1406	1974.4937	1974.7749
3	Bottom Flange	6.0000	0.3750	2.2500	0.2813	18.1406	1974.4937	1974.7749
<b>Total</b>		<b>25.32</b>		<b>468.89</b>	<b>1402.35</b>		<b>3948.99</b>	<b>5351.34</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	18.5156	in	$S_{top} = 289.02$	in <sup>3</sup>	y-bar =	18.5156	in	$S_{top} = 289.02$	in <sup>3</sup>		
$I_x =$	5351.34	n <sup>4</sup>	$S_{bott.} = 289.02$	in <sup>3</sup>	$I_x =$	5351.34	n <sup>4</sup>	$S_{bott.} = 289.02$	in <sup>3</sup>		
$C_{top} =$	18.5156	in	A =	25.3242	in <sup>2</sup>	$C_{top} =$	18.5156	in	A =	25.3242	in <sup>2</sup>
$C_{bottom} =$	18.5156	in	$r_x =$	14.5366	in	$C_{bottom} =$	18.5156	in	$r_x =$	14.5366	in
J =	2.8746	in <sup>4</sup>	Z =	336.04	in <sup>3</sup>	Z =	336.04	in <sup>3</sup>			



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Date 3/16/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	13.3242	4.0000	53.2969	0.1561	0.0000	0.0000	0.1561
2	Top Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>		<b>25.32</b>		<b>101.30</b>	<b>64.16</b>		<b>0.00</b>	<b>64.16</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 16.04 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 16.04 in <sup>3</sup>
I <sub>y</sub> =	64.16	in <sup>4</sup>	S <sub>left</sub> = 16.04 in <sup>3</sup>	I <sub>y</sub> =	64.16	in <sup>4</sup>	S <sub>left</sub> = 16.04 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 25.3242 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 25.3242 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.5917 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.5917 in

Non-composite Capacities*		
	AB	AI
M	1008.13 k-ft	1008.13 k-ft
V	193.68 k	193.68 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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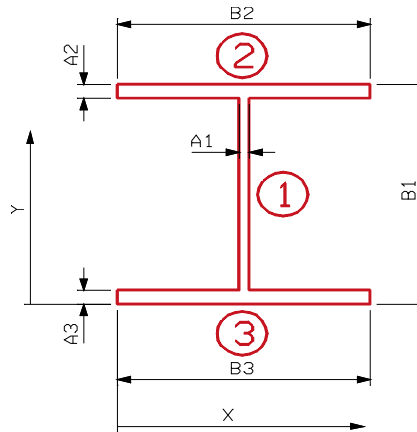
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 36.5000$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F2B-9**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		13.1250	18.2500	239.5313	1339.8438	0.0000	0.0000	1339.8438
2	Top Flange		6.0000	36.1250	216.7500	0.2813	17.8750	1917.0938	1917.3750
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	17.8750	1917.0938	1917.3750
<b>Total</b>			<b>25.13</b>		<b>458.53</b>	<b>1340.41</b>		<b>3834.19</b>	<b>5174.59</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	18.2500	in	$S_{top} = 283.54$	$in^3$	y-bar =	18.2500	in	$S_{top} = 283.54$	$in^3$		
$I_x =$	5174.59	$n^4$	$S_{bott.} = 283.54$	$in^3$	$I_x =$	5174.59	$n^4$	$S_{bott.} = 283.54$	$in^3$		
$C_{top} =$	18.2500	in	A =	25.1250	$in^2$	$C_{top} =$	18.2500	in	A =	25.1250	$in^2$
$C_{bottom} =$	18.2500	in	$r_x =$	14.3511	in	$C_{bottom} =$	18.2500	in	$r_x =$	14.3511	in
J =	2.8652	$in^4$	Z =	329.34	$in^3$	Z =	329.34	$in^3$			



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	13.1250	4.0000	52.5000	0.1538	0.0000	0.0000	0.1538
2	Top Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>		<b>25.13</b>		<b>100.50</b>	<b>64.15</b>		<b>0.00</b>	<b>64.15</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 16.04 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 16.04 in <sup>3</sup>
I <sub>y</sub> =	64.15	in <sup>4</sup>	S <sub>left</sub> = 16.04 in <sup>3</sup>	I <sub>y</sub> =	64.15	in <sup>4</sup>	S <sub>left</sub> = 16.04 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 25.1250 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 25.1250 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.5979 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.5979 in

Non-composite Capacities*		
	AB	AI
M	988.03 k-ft	988.03 k-ft
V	196.62 k	196.62 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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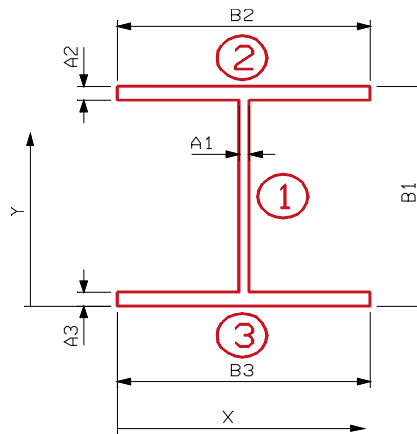
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 36.0000$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



Fascia Stringer F2C-9 Avg

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		12.9375	18.0000	232.8750	1283.2383	0.0000	0.0000	1283.2383
2	Top Flange		6.0000	35.6250	213.7500	0.2813	17.6250	1863.8438	1864.1250
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	17.6250	1863.8438	1864.1250
<b>Total</b>			<b>24.94</b>		<b>448.88</b>	<b>1283.80</b>		<b>3727.69</b>	<b>5011.49</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	18.0000	in	S <sub>top</sub> =	278.42	in <sup>3</sup>	y-bar =	18.0000	in	S <sub>top</sub> =	278.42	in <sup>3</sup>
I <sub>x</sub> =	5011.49	n <sup>4</sup>	S <sub>bottom</sub> =	278.42	in <sup>3</sup>	I <sub>x</sub> =	5011.49	n <sup>4</sup>	S <sub>bottom</sub> =	278.42	in <sup>3</sup>
C <sub>top</sub> =	18.0000	in	A =	24.9375	in <sup>2</sup>	C <sub>top</sub> =	18.0000	in	A =	24.9375	in <sup>2</sup>
C <sub>bottom</sub> =	18.0000	in	r <sub>x</sub> =	14.1761	in	C <sub>bottom</sub> =	18.0000	in	r <sub>x</sub> =	14.1761	in
J =	2.8564	in <sup>4</sup>	Z =	323.09	in <sup>3</sup>	J =			Z =	323.09	in <sup>3</sup>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	12.9375	4.0000	51.7500	0.1516	0.0000	0.0000	0.1516
2	Top Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>		<b>24.94</b>		<b>99.75</b>	<b>64.15</b>		<b>0.00</b>	<b>64.15</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 16.04 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 16.04 in <sup>3</sup>
I <sub>y</sub> =	64.15	in <sup>4</sup>	S <sub>left</sub> = 16.04 in <sup>3</sup>	I <sub>y</sub> =	64.15	in <sup>4</sup>	S <sub>left</sub> = 16.04 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 24.9375 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 24.9375 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.6039 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.6039 in

Non-composite Capacities*		
	AB	AI
M	969.26 k-ft	969.26 k-ft
V	199.47 k	199.47 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear





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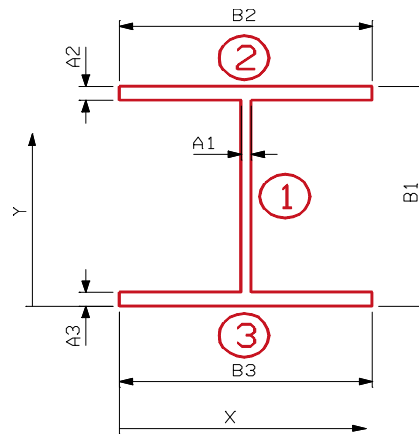
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 27.7500$  in
- $A_2 = t_f = 1.0000$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 1.0000$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F1-10 Avg**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		9.6563	13.8750	133.9805	533.5581	0.0000	0.0000	533.5581
2	Top Flange		8.0000	27.2500	218.0000	0.6667	13.3750	1431.1250	1431.7917
3	Bottom Flange		8.0000	0.5000	4.0000	0.6667	13.3750	1431.1250	1431.7917
<b>Total</b>			<b>25.66</b>		<b>355.98</b>	<b>534.89</b>		<b>2862.25</b>	<b>3397.14</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	13.8750	in	$S_{top} = 244.84$	in <sup>3</sup>	y-bar =	13.8750	in	$S_{top} = 244.84$	in <sup>3</sup>		
$I_x =$	3397.14	n <sup>4</sup>	$S_{bottom} = 244.84$	in <sup>3</sup>	$I_x =$	3397.14	n <sup>4</sup>	$S_{bottom} = 244.84$	in <sup>3</sup>		
$C_{top} =$	13.8750	in	A =	25.6563	in <sup>2</sup>	$C_{top} =$	13.8750	in	A =	25.6563	in <sup>2</sup>
$C_{bottom} =$	13.8750	in	$r_x =$	11.5069	in	$C_{bottom} =$	13.8750	in	$r_x =$	11.5069	in
J =	5.7860	in <sup>4</sup>	Z =	276.16	in <sup>3</sup>	Z =	276.16	in <sup>3</sup>			



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Date 3/16/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	9.6563	4.0000	38.6250	0.1132	0.0000	0.0000	0.1132
2	Top Flange	8.0000	4.0000	32.0000	42.6667	0.0000	0.0000	42.6667
3	Bottom Flange	8.0000	4.0000	32.0000	42.6667	0.0000	0.0000	42.6667
<b>Total</b>		<b>25.66</b>		<b>102.63</b>	<b>85.45</b>		<b>0.00</b>	<b>85.45</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 21.36 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 21.36 in <sup>3</sup>
I <sub>y</sub> =	85.45	in <sup>4</sup>	S <sub>left</sub> = 21.36 in <sup>3</sup>	I <sub>y</sub> =	85.45	in <sup>4</sup>	S <sub>left</sub> = 21.36 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 25.6563 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 25.6563 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.8249 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.8249 in

Non-composite Capacities*		
	AB	AI
M	828.49 k-ft	828.49 k-ft
V	201.62 k	201.62 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

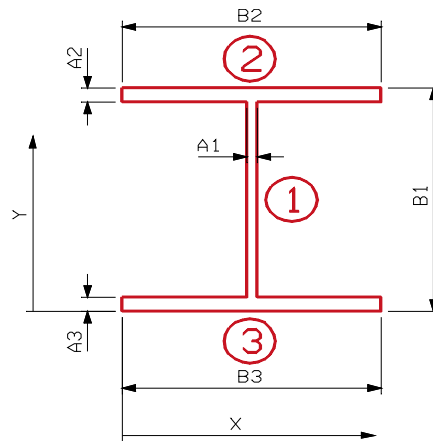
Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 11.5625$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.7500$  in
- $A_3 = t_f = 1.0000$  in
- $B_3 = b_f = 8.0000$  in

$d_o = N/A$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F1-10 @ FB C9**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		3.6797	5.7813	21.2732	29.5249	0.3712	0.5070	30.0320
2	Top Flange		6.5625	11.1875	73.4180	0.3076	5.7774	219.0492	219.3568
3	Bottom Flange		8.0000	0.5000	4.0000	0.6667	4.9101	192.8688	193.5355
<b>Total</b>			<b>18.24</b>		<b>98.69</b>	<b>30.50</b>		<b>412.42</b>	<b>442.92</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
y-bar =	5.4101	in	$S_{top} =$	71.99	in <sup>3</sup>	y-bar =	5.4101	in	$S_{top} =$	71.99	in <sup>3</sup>
$I_x =$	442.92	in <sup>4</sup>	$S_{bott.} =$	81.87	in <sup>3</sup>	$I_x =$	442.92	in <sup>4</sup>	$S_{bott.} =$	81.87	in <sup>3</sup>
$C_{top} =$	6.1524	in	A =	18.2422	in <sup>2</sup>	$C_{top} =$	6.1524	in	A =	18.2422	in <sup>2</sup>
$C_{bottom} =$	5.4101	in	$r_x =$	4.9275	in	$C_{bottom} =$	5.4101	in	$r_x =$	4.9275	in
J =	4.0696	in <sup>4</sup>	Z =	85.56	in <sup>3</sup>	Z =	85.56	in <sup>3</sup>			



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 Date 3/26/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		3.6797	4.3750	16.0986	0.0431	0.0000	0.0000	0.0431
2	Top Flange		6.5625	4.3750	28.7109	41.8701	0.0000	0.0000	41.8701
3	Bottom Flange		8.0000	4.3750	35.0000	42.6667	0.0000	0.0000	42.6667
<b>Total</b>			<b>18.24</b>		<b>79.81</b>	<b>84.58</b>		<b>0.00</b>	<b>84.58</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	4.3750	in	S <sub>right</sub> =	19.33	in <sup>3</sup>	x-bar =	4.3750	in	S <sub>right</sub> =	19.33	in <sup>3</sup>
I <sub>y</sub> =	84.58	in <sup>4</sup>	S <sub>left</sub> =	19.33	in <sup>3</sup>	I <sub>y</sub> =	84.58	in <sup>4</sup>	S <sub>left</sub> =	19.33	in <sup>3</sup>
C <sub>right</sub> =	4.3750	in	A =	18.2422	in <sup>2</sup>	C <sub>right</sub> =	4.3750	in	A =	18.2422	in <sup>2</sup>
C <sub>left</sub> =	4.3750	in	r <sub>y</sub> =	2.1533	in	C <sub>left</sub> =	4.3750	in	r <sub>y</sub> =	2.1533	in

Non-composite Capacities*		
	AB	AI
<b>M</b>	256.67 k-ft	256.67 k-ft
<b>V</b>	76.83 k	76.83 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x73	<b>Bottom Angles:</b>	
$A_1 = b_f =$	8.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7400 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	7.0000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.4550 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	7.5000 in
$B_3 = t =$	0.4550 in	$Gap =$	0.5000 in

\*select from dropdown list

Coped Stringer S1-10 @ FB C8

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.1420	7.1300	43.7925	0.2803	3.1816	62.1735	62.4538
	Web	2.8483	3.6300	10.3393	9.3015	0.3184	0.2887	9.5902
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	3.6984	47.8731	47.9460
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	0.9484	5.3966	23.3966
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	3.4484	0.0000	0.0000
<b>Total</b>		<b>18.49</b>		<b>73.01</b>	<b>27.65</b>		<b>115.73</b>	<b>143.39</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	3.9484 in	S <sub>top</sub> =	40.37 in <sup>3</sup>	y-bar =	3.9484 in	S <sub>top</sub> =	40.37 in <sup>3</sup>
I <sub>x</sub> =	143.39 in <sup>4</sup>	S <sub>bottom</sub> =	36.32 in <sup>3</sup>	I <sub>x</sub> =	143.39 in <sup>4</sup>	S <sub>bottom</sub> =	36.32 in <sup>3</sup>
C <sub>top</sub> =	3.5516 in	A =	18.4903 in <sup>2</sup>	C <sub>top</sub> =	3.5516 in	A =	18.4903 in <sup>2</sup>
C <sub>bottom</sub> =	3.9484 in	r <sub>x</sub> =	2.7847 in	C <sub>bottom</sub> =	3.9484 in	r <sub>x</sub> =	2.7847 in
J =	2.1093 in <sup>4</sup>	Z =	46.85 in <sup>3</sup>			Z =	46.85 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.1420	4.2275	25.9653	35.2602	0.0000	0.0000	35.2602
	Web		2.8483	4.2275	12.0412	0.0491	0.0000	0.0000	0.0491
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.4775	10.7415	12.5280
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.4775	0.6840	0.7465
2 (Right)	Horizontal Leg		1.7500	6.7050	11.7338	1.7865	2.4775	10.7415	12.5280
	Vertical Leg		3.0000	4.7050	14.1150	0.0625	0.4775	0.6840	0.7465
3	Additional Plate		0.0000	4.2275	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>18.49</b>		<b>78.17</b>	<b>39.01</b>		<b>22.85</b>	<b>61.86</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.2275 in	S <sub>right</sub> =	14.63 in <sup>3</sup>	x-bar =	4.2275 in	S <sub>right</sub> =	14.63 in <sup>3</sup>
I <sub>y</sub> =	61.86 in <sup>4</sup>	S <sub>left</sub> =	14.63 in <sup>3</sup>	I <sub>y</sub> =	61.86 in <sup>4</sup>	S <sub>left</sub> =	14.63 in <sup>3</sup>
C <sub>right</sub> =	4.2275 in	A =	18.4903 in <sup>2</sup>	C <sub>right</sub> =	4.2275 in	A =	18.4903 in <sup>2</sup>
C <sub>left</sub> =	4.2275 in	r <sub>y</sub> =	1.8291 in	C <sub>left</sub> =	4.2275 in	r <sub>y</sub> =	1.8291 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	140.55 k-ft	140.55 k-ft
V	174.31 k	174.31 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x73	<b>Bottom Angles:</b>	
$A_1 = b_f =$	8.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7400 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	9.0000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.4550 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	9.5000 in
$B_3 = t =$	0.4550 in	$Gap =$	0.5000 in

\*select from dropdown list

Coped Stringer S1-10 @ FB C9

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.1420	9.1300	56.0765	0.2803	4.3696	117.2739	117.5542
	Web	3.7583	4.6300	17.4009	21.3683	0.1304	0.0639	21.4322
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	4.5104	71.2017	71.2746
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	1.7604	18.5932	36.5932
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	4.2604	0.0000	0.0000
<b>Total</b>		<b>19.40</b>		<b>92.35</b>	<b>39.72</b>		<b>207.13</b>	<b>246.85</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	4.7604 in	S <sub>top</sub> =	52.08 in <sup>3</sup>	y-bar =	4.7604 in	S <sub>top</sub> =	52.08 in <sup>3</sup>
I <sub>x</sub> =	246.85 in <sup>4</sup>	S <sub>bottom</sub> =	51.86 in <sup>3</sup>	I <sub>x</sub> =	246.85 in <sup>4</sup>	S <sub>bottom</sub> =	51.86 in <sup>3</sup>
C <sub>top</sub> =	4.7396 in	A =	19.4003 in <sup>2</sup>	C <sub>top</sub> =	4.7396 in	A =	19.4003 in <sup>2</sup>
C <sub>bottom</sub> =	4.7604 in	r <sub>x</sub> =	3.5671 in	C <sub>bottom</sub> =	4.7604 in	r <sub>x</sub> =	3.5671 in
J =	2.1721 in <sup>4</sup>	Z =	62.32 in <sup>3</sup>	Z =	62.32 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.1420	4.2275	25.9653	35.2602	0.0000	0.0000	35.2602
	Web		3.7583	4.2275	15.8882	0.0648	0.0000	0.0000	0.0648
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.4775	10.7415	12.5280
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.4775	0.6840	0.7465
2 (Right)	Horizontal Leg		1.7500	6.7050	11.7338	1.7865	2.4775	10.7415	12.5280
	Vertical Leg		3.0000	4.7050	14.1150	0.0625	0.4775	0.6840	0.7465
3	Additional Plate		0.0000	4.2275	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>19.40</b>		<b>82.01</b>	<b>39.02</b>		<b>22.85</b>	<b>61.87</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.2275 in	S <sub>right</sub> =	14.64 in <sup>3</sup>	x-bar =	4.2275 in	S <sub>right</sub> =	14.64 in <sup>3</sup>
I <sub>y</sub> =	61.87 in <sup>4</sup>	S <sub>left</sub> =	14.64 in <sup>3</sup>	I <sub>y</sub> =	61.87 in <sup>4</sup>	S <sub>left</sub> =	14.64 in <sup>3</sup>
C <sub>right</sub> =	4.2275 in	A =	19.4003 in <sup>2</sup>	C <sub>right</sub> =	4.2275 in	A =	19.4003 in <sup>2</sup>
C <sub>left</sub> =	4.2275 in	r <sub>y</sub> =	1.7859 in	C <sub>left</sub> =	4.2275 in	r <sub>y</sub> =	1.7859 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	186.96 k-ft	186.96 k-ft
V	193.31 k	193.31 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section





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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x73	<b>Bottom Angles:</b>
$A_1 = b_f =$	8.3000 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.7400 in	$B_2 = L_h =$ 4.0000 in
$C_1 = d =$	7.2500 in	$C_2 = t =$ 0.5000 in
$D_1 = t_w =$	0.4550 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	$H =$ 7.7500 in
$B_3 = t =$	0.4550 in	$Gap =$ 0.5000 in

\*select from dropdown list

Coped Stringer S2-10 @ FB C8

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.1420	7.3800	45.3280	0.2803	3.3311	68.1541	68.4344
	Web	2.9621	3.7550	11.1225	10.4610	0.2939	0.2558	10.7168
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	3.7989	50.5101	50.5830
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	1.0489	6.6008	24.6008
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	3.5489	0.0000	0.0000
<b>Total</b>		<b>18.60</b>		<b>75.33</b>	<b>28.81</b>		<b>125.52</b>	<b>154.33</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	4.0489 in	S <sub>top</sub> =	41.70 in <sup>3</sup>	y-bar =	4.0489 in	S <sub>top</sub> =	41.70 in <sup>3</sup>
I <sub>x</sub> =	154.33 in <sup>4</sup>	S <sub>bottom</sub> =	38.12 in <sup>3</sup>	I <sub>x</sub> =	154.33 in <sup>4</sup>	S <sub>bottom</sub> =	38.12 in <sup>3</sup>
C <sub>top</sub> =	3.7011 in	A =	18.6041 in <sup>2</sup>	C <sub>top</sub> =	3.7011 in	A =	18.6041 in <sup>2</sup>
C <sub>bottom</sub> =	4.0489 in	r <sub>x</sub> =	2.8802 in	C <sub>bottom</sub> =	4.0489 in	r <sub>x</sub> =	2.8802 in
J =	2.1172 in <sup>4</sup>	Z =	48.70 in <sup>3</sup>	Z =	48.70 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.1420	4.2275	25.9653	35.2602	0.0000	0.0000	35.2602
	Web		2.9621	4.2275	12.5221	0.0511	0.0000	0.0000	0.0511
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.4775	10.7415	12.5280
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.4775	0.6840	0.7465
2 (Right)	Horizontal Leg		1.7500	6.7050	11.7338	1.7865	2.4775	10.7415	12.5280
	Vertical Leg		3.0000	4.7050	14.1150	0.0625	0.4775	0.6840	0.7465
3	Additional Plate		0.0000	4.2275	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>18.60</b>		<b>78.65</b>	<b>39.01</b>		<b>22.85</b>	<b>61.86</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.2275 in	S <sub>right</sub> =	14.63 in <sup>3</sup>	x-bar =	4.2275 in	S <sub>right</sub> =	14.63 in <sup>3</sup>
I <sub>y</sub> =	61.86 in <sup>4</sup>	S <sub>left</sub> =	14.63 in <sup>3</sup>	I <sub>y</sub> =	61.86 in <sup>4</sup>	S <sub>left</sub> =	14.63 in <sup>3</sup>
C <sub>right</sub> =	4.2275 in	A =	18.6041 in <sup>2</sup>	C <sub>right</sub> =	4.2275 in	A =	18.6041 in <sup>2</sup>
C <sub>left</sub> =	4.2275 in	r <sub>y</sub> =	1.8235 in	C <sub>left</sub> =	4.2275 in	r <sub>y</sub> =	1.8235 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	146.10 k-ft	146.10 k-ft
V	176.69 k	176.69 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



Made By CTG  
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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x73	<b>Bottom Angles:</b>	
$A_1 = b_f =$	8.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7400 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	8.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.4550 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	9.0000 in
$B_3 = t =$	0.4550 in	$Gap =$	0.5000 in

\*select from dropdown list

Coped Stringer S2-10 @ FB C9

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.1420	8.6300	53.0055	0.2803	4.0743	101.9571	102.2374
	Web	3.5308	4.3800	15.4649	17.7180	0.1757	0.1090	17.8270
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	4.3057	64.8864	64.9593
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	1.5557	14.5211	32.5211
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	4.0557	0.0000	0.0000
<b>Total</b>		<b>19.17</b>		<b>87.35</b>	<b>36.07</b>		<b>181.47</b>	<b>217.54</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties					As-Inspected Section Properties						
y-bar =	4.5557	in	S <sub>top</sub> =	48.95	in <sup>3</sup>	y-bar =	4.5557	in	S <sub>top</sub> =	48.95	in <sup>3</sup>
I <sub>x</sub> =	217.54	in <sup>4</sup>	S <sub>bottom</sub> =	47.75	in <sup>3</sup>	I <sub>x</sub> =	217.54	in <sup>4</sup>	S <sub>bottom</sub> =	47.75	in <sup>3</sup>
C <sub>top</sub> =	4.4443	in	A =	19.1728	in <sup>2</sup>	C <sub>top</sub> =	4.4443	in	A =	19.1728	in <sup>2</sup>
C <sub>bottom</sub> =	4.5557	in	r <sub>x</sub> =	3.3685	in	C <sub>bottom</sub> =	4.5557	in	r <sub>x</sub> =	3.3685	in
J =	2.1564	in <sup>4</sup>	Z =	58.31	in <sup>3</sup>	Z =	58.31	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.1420	4.2275	25.9653	35.2602	0.0000	0.0000	35.2602
	Web		3.5308	4.2275	14.9265	0.0609	0.0000	0.0000	0.0609
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.4775	10.7415	12.5280
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.4775	0.6840	0.7465
2 (Right)	Horizontal Leg		1.7500	6.7050	11.7338	1.7865	2.4775	10.7415	12.5280
	Vertical Leg		3.0000	4.7050	14.1150	0.0625	0.4775	0.6840	0.7465
3	Additional Plate		0.0000	4.2275	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>19.17</b>		<b>81.05</b>	<b>39.02</b>		<b>22.85</b>	<b>61.87</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	4.2275	in	S <sub>right</sub> =	14.64	in <sup>3</sup>	x-bar =	4.2275	in	S <sub>right</sub> =	14.64	in <sup>3</sup>
I <sub>y</sub> =	61.87	in <sup>4</sup>	S <sub>left</sub> =	14.64	in <sup>3</sup>	I <sub>y</sub> =	61.87	in <sup>4</sup>	S <sub>left</sub> =	14.64	in <sup>3</sup>
C <sub>right</sub> =	4.2275	in	A =	19.1728	in <sup>2</sup>	C <sub>right</sub> =	4.2275	in	A =	19.1728	in <sup>2</sup>
C <sub>left</sub> =	4.2275	in	r <sub>y</sub> =	1.7964	in	C <sub>left</sub> =	4.2275	in	r <sub>y</sub> =	1.7964	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	174.93 k-ft	174.93 k-ft
V	188.56 k	188.56 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



Made By CTG  
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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x73	<b>Bottom Angles:</b>
$A_1 = b_f =$	8.3000 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.7400 in	$B_2 = L_h =$ 4.0000 in
$C_1 = d =$	9.2500 in	$C_2 = t =$ 0.5000 in
$D_1 = t_w =$	0.4550 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	$H =$ 9.7500 in
$B_3 = t =$	0.4550 in	$GAP =$ 0.5000 in

\*select from dropdown list

Coped Stringer S3-10 @ FB C8

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.1420	9.3800	57.6120	0.2803	4.5169	125.3121	125.5924
	Web	3.8721	4.7550	18.4116	23.3679	0.1081	0.0452	23.4131
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	4.6131	74.4821	74.5550
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	1.8631	20.8266	38.8266
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	4.3631	0.0000	0.0000
<b>Total</b>		<b>19.51</b>		<b>94.90</b>	<b>41.72</b>		<b>220.67</b>	<b>262.39</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	4.8631 in	S <sub>top</sub> =	53.69 in <sup>3</sup>	y-bar =	4.8631 in	S <sub>top</sub> =	53.69 in <sup>3</sup>
I <sub>x</sub> =	262.39 in <sup>4</sup>	S <sub>bott.</sub> =	53.95 in <sup>3</sup>	I <sub>x</sub> =	262.39 in <sup>4</sup>	S <sub>bott.</sub> =	53.95 in <sup>3</sup>
C <sub>top</sub> =	4.8869 in	A =	19.5141 in <sup>2</sup>	C <sub>top</sub> =	4.8869 in	A =	19.5141 in <sup>2</sup>
C <sub>bottom</sub> =	4.8631 in	r <sub>x</sub> =	3.6669 in	C <sub>bottom</sub> =	4.8631 in	r <sub>x</sub> =	3.6669 in
J =	2.1800 in <sup>4</sup>	Z =	64.36 in <sup>3</sup>			Z =	64.36 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.1420	4.2275	25.9653	35.2602	0.0000	0.0000	35.2602
	Web		3.8721	4.2275	16.3691	0.0668	0.0000	0.0000	0.0668
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.4775	10.7415	12.5280
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.4775	0.6840	0.7465
2 (Right)	Horizontal Leg		1.7500	6.7050	11.7338	1.7865	2.4775	10.7415	12.5280
	Vertical Leg		3.0000	4.7050	14.1150	0.0625	0.4775	0.6840	0.7465
3	Additional Plate		0.0000	4.2275	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>19.51</b>		<b>82.50</b>	<b>39.02</b>		<b>22.85</b>	<b>61.88</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.2275 in	S <sub>right</sub> =	14.64 in <sup>3</sup>	x-bar =	4.2275 in	S <sub>right</sub> =	14.64 in <sup>3</sup>
I <sub>y</sub> =	61.88 in <sup>4</sup>	S <sub>left</sub> =	14.64 in <sup>3</sup>	I <sub>y</sub> =	61.88 in <sup>4</sup>	S <sub>left</sub> =	14.64 in <sup>3</sup>
C <sub>right</sub> =	4.2275 in	A =	19.5141 in <sup>2</sup>	C <sub>right</sub> =	4.2275 in	A =	19.5141 in <sup>2</sup>
C <sub>left</sub> =	4.2275 in	r <sub>y</sub> =	1.7807 in	C <sub>left</sub> =	4.2275 in	r <sub>y</sub> =	1.7807 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	193.08 k-ft	193.08 k-ft
V	195.69 k	195.69 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x73	<b>Bottom Angles:</b>
$A_1 = b_f =$	8.3000 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.7400 in	$B_2 = L_h =$ 4.0000 in
$C_1 = d =$	8.5000 in	$C_2 = t =$ 0.5000 in
$D_1 = t_w =$	0.4550 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	$H =$ 9.0000 in
$B_3 = t =$	0.4550 in	$Gap =$ 0.5000 in

\*select from dropdown list

Coped Stringer S3-10 @ FB C9

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.1420	8.6300	53.0055	0.2803	4.0743	101.9571	102.2374
	Web	3.5308	4.3800	15.4649	17.7180	0.1757	0.1090	17.8270
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	4.3057	64.8864	64.9593
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	1.5557	14.5211	32.5211
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	4.0557	0.0000	0.0000
<b>Total</b>		<b>19.17</b>		<b>87.35</b>	<b>36.07</b>		<b>181.47</b>	<b>217.54</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	4.5557 in	S <sub>top</sub> =	48.95 in <sup>3</sup>	y-bar =	4.5557 in	S <sub>top</sub> =	48.95 in <sup>3</sup>
I <sub>x</sub> =	217.54 in <sup>4</sup>	S <sub>bottom</sub> =	47.75 in <sup>3</sup>	I <sub>x</sub> =	217.54 in <sup>4</sup>	S <sub>bottom</sub> =	47.75 in <sup>3</sup>
C <sub>top</sub> =	4.4443 in	A =	19.1728 in <sup>2</sup>	C <sub>top</sub> =	4.4443 in	A =	19.1728 in <sup>2</sup>
C <sub>bottom</sub> =	4.5557 in	r <sub>x</sub> =	3.3685 in	C <sub>bottom</sub> =	4.5557 in	r <sub>x</sub> =	3.3685 in
J =	2.1564 in <sup>4</sup>	Z =	58.31 in <sup>3</sup>			Z =	58.31 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.1420	4.2275	25.9653	35.2602	0.0000	0.0000	35.2602
	Web	3.5308	4.2275	14.9265	0.0609	0.0000	0.0000	0.0609
2 (Left)	Horizontal Leg	1.7500	1.7500	3.0625	1.7865	2.4775	10.7415	12.5280
	Vertical Leg	3.0000	3.7500	11.2500	0.0625	0.4775	0.6840	0.7465
2 (Right)	Horizontal Leg	1.7500	6.7050	11.7338	1.7865	2.4775	10.7415	12.5280
	Vertical Leg	3.0000	4.7050	14.1150	0.0625	0.4775	0.6840	0.7465
3	Additional Plate	0.0000	4.2275	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>19.17</b>		<b>81.05</b>	<b>39.02</b>		<b>22.85</b>	<b>61.87</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.2275 in	S <sub>right</sub> =	14.64 in <sup>3</sup>	x-bar =	4.2275 in	S <sub>right</sub> =	14.64 in <sup>3</sup>
I <sub>y</sub> =	61.87 in <sup>4</sup>	S <sub>left</sub> =	14.64 in <sup>3</sup>	I <sub>y</sub> =	61.87 in <sup>4</sup>	S <sub>left</sub> =	14.64 in <sup>3</sup>
C <sub>right</sub> =	4.2275 in	A =	19.1728 in <sup>2</sup>	C <sub>right</sub> =	4.2275 in	A =	19.1728 in <sup>2</sup>
C <sub>left</sub> =	4.2275 in	r <sub>y</sub> =	1.7964 in	C <sub>left</sub> =	4.2275 in	r <sub>y</sub> =	1.7964 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	174.93 k-ft	174.93 k-ft
V	188.56 k	188.56 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section





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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x83	<b>Bottom Angles:</b>	
$A_1 = b_f =$	8.3600 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8350 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	9.7500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5150 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	10.2500 in
$B_3 = t =$	0.5150 in	$Gap =$	0.5000 in

\*select from dropdown list

Coped Stringer S4-10 @ FB C8

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.9806	9.8325	68.6367	0.4056	4.5993	147.6655	148.0711
	Web	4.5912	4.9575	22.7610	30.4082	0.2757	0.3489	30.7571
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	4.9832	86.9124	86.9854
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	2.2332	29.9227	47.9227
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	4.7332	0.0000	0.0000
<b>Total</b>		<b>21.07</b>		<b>110.27</b>	<b>48.89</b>		<b>264.85</b>	<b>313.74</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	5.2332 in	S <sub>top</sub> =	62.54 in <sup>3</sup>	y-bar =	5.2332 in	S <sub>top</sub> =	62.54 in <sup>3</sup>
I <sub>x</sub> =	313.74 in <sup>4</sup>	S <sub>bottom</sub> =	59.95 in <sup>3</sup>	I <sub>x</sub> =	313.74 in <sup>4</sup>	S <sub>bottom</sub> =	59.95 in <sup>3</sup>
C <sub>top</sub> =	5.0168 in	A =	21.0718 in <sup>2</sup>	C <sub>top</sub> =	5.0168 in	A =	21.0718 in <sup>2</sup>
C <sub>bottom</sub> =	5.2332 in	r <sub>x</sub> =	3.8586 in	C <sub>bottom</sub> =	5.2332 in	r <sub>x</sub> =	3.8586 in
J =	2.8199 in <sup>4</sup>	Z =	73.54 in <sup>3</sup>			Z =	73.54 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.9806	4.2575	29.7199	40.6559	0.0000	0.0000	40.6559
	Web		4.5912	4.2575	19.5471	0.1015	0.0000	0.0000	0.1015
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.5075	11.0032	12.7897
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.5075	0.7727	0.8352
2 (Right)	Horizontal Leg		1.7500	6.7650	11.8388	1.7865	2.5075	11.0032	12.7897
	Vertical Leg		3.0000	4.7650	14.2950	0.0625	0.5075	0.7727	0.8352
3	Additional Plate		0.0000	4.2575	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>21.07</b>		<b>89.71</b>	<b>44.46</b>		<b>23.55</b>	<b>68.01</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.2575 in	S <sub>right</sub> =	15.97 in <sup>3</sup>	x-bar =	4.2575 in	S <sub>right</sub> =	15.97 in <sup>3</sup>
I <sub>y</sub> =	68.01 in <sup>4</sup>	S <sub>left</sub> =	15.97 in <sup>3</sup>	I <sub>y</sub> =	68.01 in <sup>4</sup>	S <sub>left</sub> =	15.97 in <sup>3</sup>
C <sub>right</sub> =	4.2575 in	A =	21.0718 in <sup>2</sup>	C <sub>right</sub> =	4.2575 in	A =	21.0718 in <sup>2</sup>
C <sub>left</sub> =	4.2575 in	r <sub>y</sub> =	1.7965 in	C <sub>left</sub> =	4.2575 in	r <sub>y</sub> =	1.7965 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	220.62 k-ft	220.62 k-ft
V	210.70 k	210.70 k

F<sub>y</sub> = 36.00 ksi

\*Compact Section



Made By CTG  
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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x83	<b>Bottom Angles:</b>	
$A_1 = b_f =$	8.3600 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8350 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	8.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5150 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	9.0000 in
$B_3 = t =$	0.5150 in	$Gap =$	0.5000 in

\*select from dropdown list

Coped Stringer S4-10 @ FB C9

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.9806	8.5825	59.9110	0.4056	3.8885	105.5522	105.9578
	Web	3.9475	4.3325	17.1024	19.3269	0.3615	0.5157	19.8426
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	4.4440	69.1205	69.1934
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	1.6940	17.2169	35.2169
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	4.1940	0.0000	0.0000
<b>Total</b>		<b>20.43</b>		<b>95.89</b>	<b>37.81</b>		<b>192.41</b>	<b>230.21</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	4.6940 in	S <sub>top</sub> =	53.46 in <sup>3</sup>	y-bar =	4.6940 in	S <sub>top</sub> =	53.46 in <sup>3</sup>
I <sub>x</sub> =	230.21 in <sup>4</sup>	S <sub>bott.</sub> =	49.04 in <sup>3</sup>	I <sub>x</sub> =	230.21 in <sup>4</sup>	S <sub>bott.</sub> =	49.04 in <sup>3</sup>
C <sub>top</sub> =	4.3060 in	A =	20.4281 in <sup>2</sup>	C <sub>top</sub> =	4.3060 in	A =	20.4281 in <sup>2</sup>
C <sub>bottom</sub> =	4.6940 in	r <sub>x</sub> =	3.3570 in	C <sub>bottom</sub> =	4.6940 in	r <sub>x</sub> =	3.3570 in
J =	2.7630 in <sup>4</sup>	Z =	62.19 in <sup>3</sup>	Z =	62.19 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.9806	4.2575	29.7199	40.6559	0.0000	0.0000	40.6559
	Web		3.9475	4.2575	16.8064	0.0872	0.0000	0.0000	0.0872
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.5075	11.0032	12.7897
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.5075	0.7727	0.8352
2 (Right)	Horizontal Leg		1.7500	6.7650	11.8388	1.7865	2.5075	11.0032	12.7897
	Vertical Leg		3.0000	4.7650	14.2950	0.0625	0.5075	0.7727	0.8352
3	Additional Plate		0.0000	4.2575	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>20.43</b>		<b>86.97</b>	<b>44.44</b>		<b>23.55</b>	<b>67.99</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.2575 in	S <sub>right</sub> =	15.97 in <sup>3</sup>	x-bar =	4.2575 in	S <sub>right</sub> =	15.97 in <sup>3</sup>
I <sub>y</sub> =	67.99 in <sup>4</sup>	S <sub>left</sub> =	15.97 in <sup>3</sup>	I <sub>y</sub> =	67.99 in <sup>4</sup>	S <sub>left</sub> =	15.97 in <sup>3</sup>
C <sub>right</sub> =	4.2575 in	A =	20.4281 in <sup>2</sup>	C <sub>right</sub> =	4.2575 in	A =	20.4281 in <sup>2</sup>
C <sub>left</sub> =	4.2575 in	r <sub>y</sub> =	1.8244 in	C <sub>left</sub> =	4.2575 in	r <sub>y</sub> =	1.8244 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	186.57 k-ft	186.57 k-ft
V	197.26 k	197.26 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x83	<b>Bottom Angles:</b>	
$A_1 = b_f =$	8.3600 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8350 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	10.2500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5150 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	10.7500 in
$B_3 = t =$	0.5150 in	$Gap =$	0.5000 in

\*select from dropdown list

Coped Stringer S5-10 @ FB C8

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.9806	10.3325	72.1270	0.4056	4.8822	166.3869	166.7925
	Web	4.8487	5.2075	25.2497	35.8168	0.2428	0.2859	36.1027
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.2003	94.6519	94.7248
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	2.4503	36.0246	54.0246
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	4.9503	0.0000	0.0000
<b>Total</b>		<b>21.33</b>		<b>116.25</b>	<b>54.30</b>		<b>297.35</b>	<b>351.64</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	5.4503 in	S <sub>top</sub> =	66.35 in <sup>3</sup>	y-bar =	5.4503 in	S <sub>top</sub> =	66.35 in <sup>3</sup>
I <sub>x</sub> =	351.64 in <sup>4</sup>	S <sub>bottom</sub> =	64.52 in <sup>3</sup>	I <sub>x</sub> =	351.64 in <sup>4</sup>	S <sub>bottom</sub> =	64.52 in <sup>3</sup>
C <sub>top</sub> =	5.2997 in	A =	21.3293 in <sup>2</sup>	C <sub>top</sub> =	5.2997 in	A =	21.3293 in <sup>2</sup>
C <sub>bottom</sub> =	5.4503 in	r <sub>x</sub> =	4.0603 in	C <sub>bottom</sub> =	5.4503 in	r <sub>x</sub> =	4.0603 in
J =	2.8427 in <sup>4</sup>	Z =	78.27 in <sup>3</sup>			Z =	78.27 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.9806	4.2575	29.7199	40.6559	0.0000	0.0000	40.6559
	Web		4.8487	4.2575	20.6434	0.1072	0.0000	0.0000	0.1072
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.5075	11.0032	12.7897
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.5075	0.7727	0.8352
2 (Right)	Horizontal Leg		1.7500	6.7650	11.8388	1.7865	2.5075	11.0032	12.7897
	Vertical Leg		3.0000	4.7650	14.2950	0.0625	0.5075	0.7727	0.8352
3	Additional Plate		0.0000	4.2575	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>21.33</b>		<b>90.81</b>	<b>44.46</b>		<b>23.55</b>	<b>68.01</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.2575 in	S <sub>right</sub> =	15.97 in <sup>3</sup>	x-bar =	4.2575 in	S <sub>right</sub> =	15.97 in <sup>3</sup>
I <sub>y</sub> =	68.01 in <sup>4</sup>	S <sub>left</sub> =	15.97 in <sup>3</sup>	I <sub>y</sub> =	68.01 in <sup>4</sup>	S <sub>left</sub> =	15.97 in <sup>3</sup>
C <sub>right</sub> =	4.2575 in	A =	21.3293 in <sup>2</sup>	C <sub>right</sub> =	4.2575 in	A =	21.3293 in <sup>2</sup>
C <sub>left</sub> =	4.2575 in	r <sub>y</sub> =	1.7857 in	C <sub>left</sub> =	4.2575 in	r <sub>y</sub> =	1.7857 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	234.81 k-ft	234.81 k-ft
V	216.08 k	216.08 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x83	<b>Bottom Angles:</b>	
$A_1 = b_f =$	8.3600 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8350 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	8.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5150 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	9.0000 in
$B_3 = t =$	0.5150 in	$Gap =$	0.5000 in

\*select from dropdown list

Coped Stringer S5-10 @ FB C9

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.9806	8.5825	59.9110	0.4056	3.8885	105.5522	105.9578
	Web	3.9475	4.3325	17.1024	19.3269	0.3615	0.5157	19.8426
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	4.4440	69.1205	69.1934
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	1.6940	17.2169	35.2169
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	4.1940	0.0000	0.0000
<b>Total</b>		<b>20.43</b>		<b>95.89</b>	<b>37.81</b>		<b>192.41</b>	<b>230.21</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	4.6940 in	S <sub>top</sub> =	53.46 in <sup>3</sup>	y-bar =	4.6940 in	S <sub>top</sub> =	53.46 in <sup>3</sup>
I <sub>x</sub> =	230.21 in <sup>4</sup>	S <sub>bott.</sub> =	49.04 in <sup>3</sup>	I <sub>x</sub> =	230.21 in <sup>4</sup>	S <sub>bott.</sub> =	49.04 in <sup>3</sup>
C <sub>top</sub> =	4.3060 in	A =	20.4281 in <sup>2</sup>	C <sub>top</sub> =	4.3060 in	A =	20.4281 in <sup>2</sup>
C <sub>bottom</sub> =	4.6940 in	r <sub>x</sub> =	3.3570 in	C <sub>bottom</sub> =	4.6940 in	r <sub>x</sub> =	3.3570 in
J =	2.7630 in <sup>4</sup>	Z =	62.19 in <sup>3</sup>			Z =	62.19 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.9806	4.2575	29.7199	40.6559	0.0000	0.0000	40.6559
	Web		3.9475	4.2575	16.8064	0.0872	0.0000	0.0000	0.0872
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.5075	11.0032	12.7897
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.5075	0.7727	0.8352
2 (Right)	Horizontal Leg		1.7500	6.7650	11.8388	1.7865	2.5075	11.0032	12.7897
	Vertical Leg		3.0000	4.7650	14.2950	0.0625	0.5075	0.7727	0.8352
3	Additional Plate		0.0000	4.2575	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>20.43</b>		<b>86.97</b>	<b>44.44</b>		<b>23.55</b>	<b>67.99</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.2575 in	S <sub>right</sub> =	15.97 in <sup>3</sup>	x-bar =	4.2575 in	S <sub>right</sub> =	15.97 in <sup>3</sup>
I <sub>y</sub> =	67.99 in <sup>4</sup>	S <sub>left</sub> =	15.97 in <sup>3</sup>	I <sub>y</sub> =	67.99 in <sup>4</sup>	S <sub>left</sub> =	15.97 in <sup>3</sup>
C <sub>right</sub> =	4.2575 in	A =	20.4281 in <sup>2</sup>	C <sub>right</sub> =	4.2575 in	A =	20.4281 in <sup>2</sup>
C <sub>left</sub> =	4.2575 in	r <sub>y</sub> =	1.8244 in	C <sub>left</sub> =	4.2575 in	r <sub>y</sub> =	1.8244 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	186.57 k-ft	186.57 k-ft
V	197.26 k	197.26 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





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Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x83	<b>Bottom Angles:</b>	
$A_1 = b_f =$	8.3600 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8350 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	9.7500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5150 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	10.2500 in
$B_3 = t =$	0.5150 in	$Gap =$	0.5000 in

\*select from dropdown list

Coped Stringer S6-10 @ FB C8

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.9806	9.8325	68.6367	0.4056	4.5993	147.6655	148.0711
	Web	4.5912	4.9575	22.7610	30.4082	0.2757	0.3489	30.7571
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	4.9832	86.9124	86.9854
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	2.2332	29.9227	47.9227
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	4.7332	0.0000	0.0000
<b>Total</b>		<b>21.07</b>		<b>110.27</b>	<b>48.89</b>		<b>264.85</b>	<b>313.74</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	5.2332	in	S <sub>top</sub> =	62.54	in <sup>3</sup>	y-bar =	5.2332	in	S <sub>top</sub> =	62.54	in <sup>3</sup>
I <sub>x</sub> =	313.74	in <sup>4</sup>	S <sub>bottom</sub> =	59.95	in <sup>3</sup>	I <sub>x</sub> =	313.74	in <sup>4</sup>	S <sub>bottom</sub> =	59.95	in <sup>3</sup>
C <sub>top</sub> =	5.0168	in	A =	21.0718	in <sup>2</sup>	C <sub>top</sub> =	5.0168	in	A =	21.0718	in <sup>2</sup>
C <sub>bottom</sub> =	5.2332	in	r <sub>x</sub> =	3.8586	in	C <sub>bottom</sub> =	5.2332	in	r <sub>x</sub> =	3.8586	in
J =	2.8199	in <sup>4</sup>	Z =	73.54	in <sup>3</sup>	Z =	73.54	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.9806	4.2575	29.7199	40.6559	0.0000	0.0000	40.6559
	Web		4.5912	4.2575	19.5471	0.1015	0.0000	0.0000	0.1015
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.5075	11.0032	12.7897
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.5075	0.7727	0.8352
2 (Right)	Horizontal Leg		1.7500	6.7650	11.8388	1.7865	2.5075	11.0032	12.7897
	Vertical Leg		3.0000	4.7650	14.2950	0.0625	0.5075	0.7727	0.8352
3	Additional Plate		0.0000	4.2575	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>21.07</b>		<b>89.71</b>	<b>44.46</b>		<b>23.55</b>	<b>68.01</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	4.2575	in	S <sub>right</sub> =	15.97	in <sup>3</sup>	x-bar =	4.2575	in	S <sub>right</sub> =	15.97	in <sup>3</sup>
I <sub>y</sub> =	68.01	in <sup>4</sup>	S <sub>left</sub> =	15.97	in <sup>3</sup>	I <sub>y</sub> =	68.01	in <sup>4</sup>	S <sub>left</sub> =	15.97	in <sup>3</sup>
C <sub>right</sub> =	4.2575	in	A =	21.0718	in <sup>2</sup>	C <sub>right</sub> =	4.2575	in	A =	21.0718	in <sup>2</sup>
C <sub>left</sub> =	4.2575	in	r <sub>y</sub> =	1.7965	in	C <sub>left</sub> =	4.2575	in	r <sub>y</sub> =	1.7965	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	220.62 k-ft	220.62 k-ft
V	210.70 k	210.70 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x83	<b>Bottom Angles:</b>	
$A_1 = b_f =$	8.3600 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8350 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	8.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5150 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	9.0000 in
$B_3 = t =$	0.5150 in	$Gap =$	0.5000 in

\*select from dropdown list

Coped Stringer S6-10 @ FB C9

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.9806	8.5825	59.9110	0.4056	3.8885	105.5522	105.9578
	Web	3.9475	4.3325	17.1024	19.3269	0.3615	0.5157	19.8426
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	4.4440	69.1205	69.1934
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	1.6940	17.2169	35.2169
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	4.1940	0.0000	0.0000
<b>Total</b>		<b>20.43</b>		<b>95.89</b>	<b>37.81</b>		<b>192.41</b>	<b>230.21</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	4.6940	in	S <sub>top</sub> =	53.46	in <sup>3</sup>	y-bar =	4.6940	in	S <sub>top</sub> =	53.46	in <sup>3</sup>
I <sub>x</sub> =	230.21	in <sup>4</sup>	S <sub>bott.</sub> =	49.04	in <sup>3</sup>	I <sub>x</sub> =	230.21	in <sup>4</sup>	S <sub>bott.</sub> =	49.04	in <sup>3</sup>
C <sub>top</sub> =	4.3060	in	A =	20.4281	in <sup>2</sup>	C <sub>top</sub> =	4.3060	in	A =	20.4281	in <sup>2</sup>
C <sub>bottom</sub> =	4.6940	in	r <sub>x</sub> =	3.3570	in	C <sub>bottom</sub> =	4.6940	in	r <sub>x</sub> =	3.3570	in
J =	2.7630	in <sup>4</sup>	Z =	62.19	in <sup>3</sup>	Z =	62.19	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.9806	4.2575	29.7199	40.6559	0.0000	0.0000	40.6559
	Web		3.9475	4.2575	16.8064	0.0872	0.0000	0.0000	0.0872
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.5075	11.0032	12.7897
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.5075	0.7727	0.8352
2 (Right)	Horizontal Leg		1.7500	6.7650	11.8388	1.7865	2.5075	11.0032	12.7897
	Vertical Leg		3.0000	4.7650	14.2950	0.0625	0.5075	0.7727	0.8352
3	Additional Plate		0.0000	4.2575	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>20.43</b>		<b>86.97</b>	<b>44.44</b>		<b>23.55</b>	<b>67.99</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	4.2575	in	S <sub>right</sub> =	15.97	in <sup>3</sup>	x-bar =	4.2575	in	S <sub>right</sub> =	15.97	in <sup>3</sup>
I <sub>y</sub> =	67.99	in <sup>4</sup>	S <sub>left</sub> =	15.97	in <sup>3</sup>	I <sub>y</sub> =	67.99	in <sup>4</sup>	S <sub>left</sub> =	15.97	in <sup>3</sup>
C <sub>right</sub> =	4.2575	in	A =	20.4281	in <sup>2</sup>	C <sub>right</sub> =	4.2575	in	A =	20.4281	in <sup>2</sup>
C <sub>left</sub> =	4.2575	in	r <sub>y</sub> =	1.8244	in	C <sub>left</sub> =	4.2575	in	r <sub>y</sub> =	1.8244	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	186.57 k-ft	186.57 k-ft
V	197.26 k	197.26 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



Made By CTG  
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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x83	<b>Bottom Angles:</b>	
$A_1 = b_f =$	8.3600 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8350 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	10.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5150 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	11.0000 in
$B_3 = t =$	0.5150 in	$GAP =$	0.5000 in

\*select from dropdown list

Coped Stringer S7-10 @ FB C8

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.9806	10.5825	73.8722	0.4056	5.0233	176.1457	176.5513
	Web	4.9775	5.3325	26.5424	38.7464	0.2267	0.2558	39.0022
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.3092	98.6564	98.7293
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	2.5592	39.2968	57.2968
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.0592	0.0000	0.0000
<b>Total</b>		<b>21.46</b>		<b>119.29</b>	<b>57.22</b>		<b>314.35</b>	<b>371.58</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	5.5592 in	S <sub>top</sub> =	68.29 in <sup>3</sup>	y-bar =	5.5592 in	S <sub>top</sub> =	68.29 in <sup>3</sup>
I <sub>x</sub> =	371.58 in <sup>4</sup>	S <sub>bottom</sub> =	66.84 in <sup>3</sup>	I <sub>x</sub> =	371.58 in <sup>4</sup>	S <sub>bottom</sub> =	66.84 in <sup>3</sup>
C <sub>top</sub> =	5.4408 in	A =	21.4581 in <sup>2</sup>	C <sub>top</sub> =	5.4408 in	A =	21.4581 in <sup>2</sup>
C <sub>bottom</sub> =	5.5592 in	r <sub>x</sub> =	4.1613 in	C <sub>bottom</sub> =	5.5592 in	r <sub>x</sub> =	4.1613 in
J =	2.8541 in <sup>4</sup>	Z =	80.67 in <sup>3</sup>			Z =	80.67 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.9806	4.2575	29.7199	40.6559	0.0000	0.0000	40.6559
	Web		4.9775	4.2575	21.1916	0.1100	0.0000	0.0000	0.1100
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.5075	11.0032	12.7897
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.5075	0.7727	0.8352
2 (Right)	Horizontal Leg		1.7500	6.7650	11.8388	1.7865	2.5075	11.0032	12.7897
	Vertical Leg		3.0000	4.7650	14.2950	0.0625	0.5075	0.7727	0.8352
3	Additional Plate		0.0000	4.2575	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>21.46</b>		<b>91.36</b>	<b>44.46</b>		<b>23.55</b>	<b>68.02</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.2575 in	S <sub>right</sub> =	15.98 in <sup>3</sup>	x-bar =	4.2575 in	S <sub>right</sub> =	15.98 in <sup>3</sup>
I <sub>y</sub> =	68.02 in <sup>4</sup>	S <sub>left</sub> =	15.98 in <sup>3</sup>	I <sub>y</sub> =	68.02 in <sup>4</sup>	S <sub>left</sub> =	15.98 in <sup>3</sup>
C <sub>right</sub> =	4.2575 in	A =	21.4581 in <sup>2</sup>	C <sub>right</sub> =	4.2575 in	A =	21.4581 in <sup>2</sup>
C <sub>left</sub> =	4.2575 in	r <sub>y</sub> =	1.7804 in	C <sub>left</sub> =	4.2575 in	r <sub>y</sub> =	1.7804 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	242.01 k-ft	242.01 k-ft
V	218.77 k	218.77 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x83	<b>Bottom Angles:</b>	
$A_1 = b_f =$	0.0000 in	$A_2 = L_v =$	0.0000 in
$B_1 = t_f =$	0.0000 in	$B_2 = L_h =$	0.0000 in
$C_1 = d =$	9.1500 in	$C_2 = t =$	0.0000 in
$D_1 = t_w =$	0.5150 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	H =	9.1500 in
$B_3 = t =$	0.5150 in	Gap =	0.0000 in

\*select from dropdown list

Coped Stringer S7-10 @ FB C9

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	0.0000	9.1500	0.0000	0.0000	4.5750	0.0000	0.0000
	Web	4.7123	4.5750	21.5585	32.8768	0.0000	0.0000	32.8768
2	Horizontal Legs	0.0000	0.0000	0.0000	0.0000	4.5750	0.0000	0.0000
	Vertical Legs	0.0000	0.0000	0.0000	0.0000	4.5750	0.0000	0.0000
3	Additional Plate	0.0000	0.0000	0.0000	0.0000	4.5750	0.0000	0.0000
<b>Total</b>		<b>4.71</b>		<b>21.56</b>	<b>32.88</b>		<b>0.00</b>	<b>32.88</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	4.5750 in	S <sub>top</sub> =	7.19 in <sup>3</sup>	y-bar =	4.5750 in	S <sub>top</sub> =	7.19 in <sup>3</sup>
I <sub>x</sub> =	32.88 in <sup>4</sup>	S <sub>bott.</sub> =	7.19 in <sup>3</sup>	I <sub>x</sub> =	32.88 in <sup>4</sup>	S <sub>bott.</sub> =	7.19 in <sup>3</sup>
C <sub>top</sub> =	4.5750 in	A =	4.7123 in <sup>2</sup>	C <sub>top</sub> =	4.5750 in	A =	4.7123 in <sup>2</sup>
C <sub>bottom</sub> =	4.5750 in	r <sub>x</sub> =	2.6414 in	C <sub>bottom</sub> =	4.5750 in	r <sub>x</sub> =	2.6414 in
J =	0.4166 in <sup>4</sup>	Z =	10.78 in <sup>3</sup>	Z =	10.78 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		0.0000	0.2575	0.0000	0.0000	0.0000	0.0000	0.0000
	Web		4.7123	0.2575	1.2134	0.1042	0.0000	0.0000	0.1042
2 (Left)	Horizontal Leg		0.0000	0.0000	0.0000	0.0000	0.2575	0.0000	0.0000
	Vertical Leg		0.0000	0.0000	0.0000	0.0000	0.2575	0.0000	0.0000
2 (Right)	Horizontal Leg		0.0000	0.5150	0.0000	0.0000	0.2575	0.0000	0.0000
	Vertical Leg		0.0000	0.5150	0.0000	0.0000	0.2575	0.0000	0.0000
3	Additional Plate		0.0000	0.2575	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>4.71</b>		<b>1.21</b>	<b>0.10</b>		<b>0.00</b>	<b>0.10</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	0.2575 in	S <sub>right</sub> =	0.40 in <sup>3</sup>	x-bar =	0.2575 in	S <sub>right</sub> =	0.40 in <sup>3</sup>
I <sub>y</sub> =	0.10 in <sup>4</sup>	S <sub>left</sub> =	0.40 in <sup>3</sup>	I <sub>y</sub> =	0.10 in <sup>4</sup>	S <sub>left</sub> =	0.40 in <sup>3</sup>
C <sub>right</sub> =	0.2575 in	A =	4.7123 in <sup>2</sup>	C <sub>right</sub> =	0.2575 in	A =	4.7123 in <sup>2</sup>
C <sub>left</sub> =	0.2575 in	r <sub>y</sub> =	0.1487 in	C <sub>left</sub> =	0.2575 in	r <sub>y</sub> =	0.1487 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	---	---
V	98.39 k	98.39 k

F<sub>y</sub> = **36.00 ksi**





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Date 3/26/2012

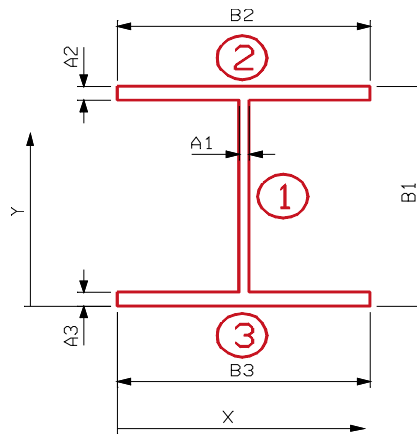
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 35.5000$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F2-10**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		12.7500	17.7500	226.3125	1228.2500	0.0000	0.0000	1228.2500
2	Top Flange		6.0000	35.1250	210.7500	0.2813	17.3750	1811.3438	1811.6250
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	17.3750	1811.3438	1811.6250
<b>Total</b>			<b>24.75</b>		<b>439.31</b>	<b>1228.81</b>		<b>3622.69</b>	<b>4851.50</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	17.7500	in	$S_{top} = 273.32$	in <sup>3</sup>	y-bar =	17.7500	in	$S_{top} = 273.32$	in <sup>3</sup>		
$I_x =$	4851.50	n <sup>4</sup>	$S_{bott.} = 273.32$	in <sup>3</sup>	$I_x =$	4851.50	n <sup>4</sup>	$S_{bott.} = 273.32$	in <sup>3</sup>		
$C_{top} =$	17.7500	in	A =	24.7500	in <sup>2</sup>	$C_{top} =$	17.7500	in	A =	24.7500	in <sup>2</sup>
$C_{bottom} =$	17.7500	in	$r_x =$	14.0007	in	$C_{bottom} =$	17.7500	in	$r_x =$	14.0007	in
J =	2.8477	in <sup>4</sup>	Z =	316.88	in <sup>3</sup>	Z =	<b>316.88</b>	in <sup>3</sup>			



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	12.7500	4.0000	51.0000	0.1494	0.0000	0.0000	0.1494
2	Top Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>		<b>24.75</b>		<b>99.00</b>	<b>64.15</b>		<b>0.00</b>	<b>64.15</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 16.04 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 16.04 in <sup>3</sup>
I <sub>y</sub> =	64.15	in <sup>4</sup>	S <sub>left</sub> = 16.04 in <sup>3</sup>	I <sub>y</sub> =	64.15	in <sup>4</sup>	S <sub>left</sub> = 16.04 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 24.7500 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 24.7500 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.6099 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.6099 in

Non-composite Capacities*		
	AB	AI
M	950.63 k-ft	950.63 k-ft
V	202.41 k	202.41 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/16/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

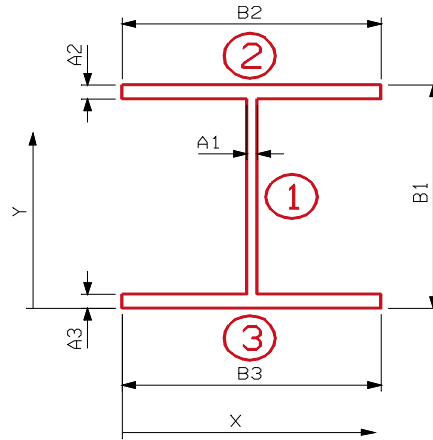
Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 17.7500$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.7500$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in

$d_o = N/A$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F2-10 @ FB C9**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		6.0938	8.8750	54.0820	134.0942	0.2563	0.4002	134.4945
2	Top Flange		6.5625	17.3750	114.0234	0.3076	8.2437	445.9803	446.2879
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	8.7563	460.0348	460.3160
<b>Total</b>			<b>18.66</b>		<b>170.36</b>	<b>134.68</b>		<b>906.42</b>	<b>1041.10</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
y-bar =	9.1313	in	$S_{top} =$	120.80	in <sup>3</sup>	y-bar =	9.1313	in	$S_{top} =$	120.80	in <sup>3</sup>
$I_x =$	1041.10	in <sup>4</sup>	$S_{bott.} =$	114.01	in <sup>3</sup>	$I_x =$	1041.10	in <sup>4</sup>	$S_{bott.} =$	114.01	in <sup>3</sup>
$C_{top} =$	8.6187	in	A =	18.6563	in <sup>2</sup>	$C_{top} =$	8.6187	in	A =	18.6563	in <sup>2</sup>
$C_{bottom} =$	9.1313	in	$r_x =$	7.4702	in	$C_{bottom} =$	9.1313	in	$r_x =$	7.4702	in
J =	2.6411	in <sup>4</sup>	Z =	131.33	in <sup>3</sup>	Z =	131.33	in <sup>3</sup>			



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Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		6.0938	4.3750	26.6602	0.0714	0.0000	0.0000	0.0714
2	Top Flange		6.5625	4.3750	28.7109	41.8701	0.0000	0.0000	41.8701
3	Bottom Flange		6.0000	4.3750	26.2500	32.0000	0.0000	0.0000	32.0000
<b>Total</b>			<b>18.66</b>		<b>81.62</b>	<b>73.94</b>		<b>0.00</b>	<b>73.94</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.3750	in	S <sub>right</sub> = 16.90 in <sup>3</sup>	x-bar =	4.3750	in	S <sub>right</sub> = 16.90 in <sup>3</sup>
I <sub>y</sub> =	73.94	in <sup>4</sup>	S <sub>left</sub> = 16.90 in <sup>3</sup>	I <sub>y</sub> =	73.94	in <sup>4</sup>	S <sub>left</sub> = 16.90 in <sup>3</sup>
C <sub>right</sub> =	4.3750	in	A = 18.6563 in <sup>2</sup>	C <sub>right</sub> =	4.3750	in	A = 18.6563 in <sup>2</sup>
C <sub>left</sub> =	4.3750	in	r <sub>y</sub> = 1.9908 in	C <sub>left</sub> =	4.3750	in	r <sub>y</sub> = 1.9908 in

Non-composite Capacities*		
	AB	AI
M	393.98 k-ft	393.98 k-ft
V	127.24 k	127.24 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/16/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

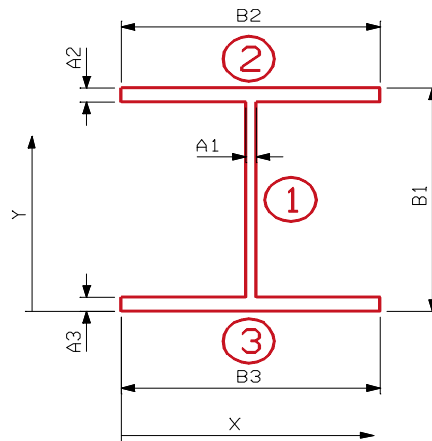
Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 14.8750$  in
- $A_2 = t_f = 1.2500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.7500$  in

$d_o = 15.0000$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F1-11 @ FB C9**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		4.8281	7.4375	35.9092	66.6948	1.0181	5.0043	71.6990
2	Top Flange		10.0000	14.2500	142.5000	1.3021	5.7944	335.7532	337.0552
3	Bottom Flange		6.5625	0.3750	2.4609	0.3076	8.0806	428.5034	428.8110
<b>Total</b>			<b>21.39</b>		<b>180.87</b>	<b>68.30</b>		<b>769.26</b>	<b>837.57</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	8.4556	in	$S_{top} = 130.47$	$in^3$	y-bar =	8.4556	in	$S_{top} = 130.47$	$in^3$		
$I_x =$	837.57	$in^4$	$S_{bott.} = 99.05$	$in^3$	$I_x =$	837.57	$in^4$	$S_{bott.} = 99.05$	$in^3$		
$C_{top} =$	6.4194	in	A =	21.3906	$in^2$	$C_{top} =$	6.4194	in	A =	21.3906	$in^2$
$C_{bottom} =$	8.4556	in	$r_x =$	6.2575	in	$C_{bottom} =$	8.4556	in	$r_x =$	6.2575	in
J =	6.6651	$in^4$	Z =	122.99	$in^3$	Z =	122.99	$in^3$			



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Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		4.8281	4.3750	21.1230	0.0566	0.0000	0.0000	0.0566
2	Top Flange		10.0000	4.3750	43.7500	53.3333	0.0000	0.0000	53.3333
3	Bottom Flange		6.5625	4.3750	28.7109	41.8701	0.0000	0.0000	41.8701
<b>Total</b>			<b>21.39</b>		<b>93.58</b>	<b>95.26</b>		<b>0.00</b>	<b>95.26</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	4.3750	in	S <sub>right</sub> =	21.77	in <sup>3</sup>	x-bar =	4.3750	in	S <sub>right</sub> =	21.77	in <sup>3</sup>
I <sub>y</sub> =	95.26	in <sup>4</sup>	S <sub>left</sub> =	21.77	in <sup>3</sup>	I <sub>y</sub> =	95.26	in <sup>4</sup>	S <sub>left</sub> =	21.77	in <sup>3</sup>
C <sub>right</sub> =	4.3750	in	A =	21.3906	in <sup>2</sup>	C <sub>right</sub> =	4.3750	in	A =	21.3906	in <sup>2</sup>
C <sub>left</sub> =	4.3750	in	r <sub>y</sub> =	2.1103	in	C <sub>left</sub> =	4.3750	in	r <sub>y</sub> =	2.1103	in

Non-composite Capacities*		
	AB	AI
M	368.98 k-ft	368.98 k-ft
V	100.81 k	100.81 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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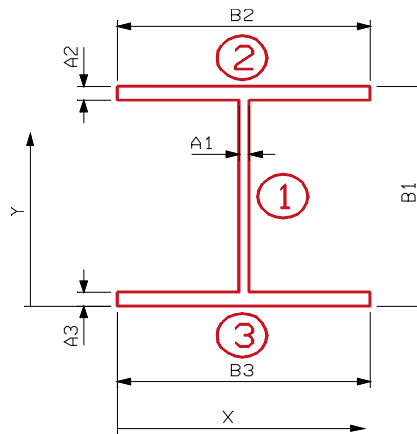
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 28.0313$  in
- $A_2 = t_f = 1.2500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 1.2500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



Fascia Stringer F1-11 Avg

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	9.5742	14.0156	134.1887	520.0753	0.0000	0.0000	520.0753
2	Top Flange	10.0000	27.4063	274.0625	1.3021	13.3906	1793.0884	1794.3905
3	Bottom Flange	10.0000	0.6250	6.2500	1.3021	13.3906	1793.0884	1794.3905
<b>Total</b>		<b>29.57</b>		<b>414.50</b>	<b>522.68</b>		<b>3586.18</b>	<b>4108.86</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	14.0156	in	$S_{top} = 293.16$	in <sup>3</sup>	y-bar =	14.0156	in	$S_{top} = 293.16$	in <sup>3</sup>		
$I_x =$	4108.86	n <sup>4</sup>	$S_{bott.} = 293.16$	in <sup>3</sup>	$I_x =$	4108.86	n <sup>4</sup>	$S_{bott.} = 293.16$	in <sup>3</sup>		
$C_{top} =$	14.0156	in	A =	29.5742	in <sup>2</sup>	$C_{top} =$	14.0156	in	A =	29.5742	in <sup>2</sup>
$C_{bottom} =$	14.0156	in	$r_x =$	11.7870	in	$C_{bottom} =$	14.0156	in	$r_x =$	11.7870	in
J =	10.8655	in <sup>4</sup>	Z =	328.92	in <sup>3</sup>	Z =	328.92	in <sup>3</sup>			



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Date 3/16/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	9.5742	4.0000	38.2969	0.1122	0.0000	0.0000	0.1122
2	Top Flange	10.0000	4.0000	40.0000	53.3333	0.0000	0.0000	53.3333
3	Bottom Flange	10.0000	4.0000	40.0000	53.3333	0.0000	0.0000	53.3333
<b>Total</b>		<b>29.57</b>		<b>118.30</b>	<b>106.78</b>		<b>0.00</b>	<b>106.78</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000 in	S <sub>right</sub> =	26.69 in <sup>3</sup>	x-bar =	4.0000 in	S <sub>right</sub> =	26.69 in <sup>3</sup>
I <sub>y</sub> =	106.78 in <sup>4</sup>	S <sub>left</sub> =	26.69 in <sup>3</sup>	I <sub>y</sub> =	106.78 in <sup>4</sup>	S <sub>left</sub> =	26.69 in <sup>3</sup>
C <sub>right</sub> =	4.0000 in	A =	29.5742 in <sup>2</sup>	C <sub>right</sub> =	4.0000 in	A =	29.5742 in <sup>2</sup>
C <sub>left</sub> =	4.0000 in	r <sub>y</sub> =	1.9001 in	C <sub>left</sub> =	4.0000 in	r <sub>y</sub> =	1.9001 in

Non-composite Capacities*		
	AB	AI
M	986.77 k-ft	986.77 k-ft
V	199.91 k	199.91 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear





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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x86	<b>Bottom Angles:</b>	
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7700 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	7.0000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.4800 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	7.4375 in
$B_3 = t =$	0.4800 in	$\text{Gap} =$	0.4375 in

\*select from dropdown list

Coped Stringer S1-11 @ FB D1

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	8.5470	7.0525	60.2777	0.4223	2.7850	66.2947	66.7170
	Web	2.9904	3.5525	10.6234	9.6722	0.7150	1.5286	11.2007
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	4.0175	56.4897	56.5627
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	1.2675	9.6386	27.6386
3	Additional Plate	0.0000	0.4375	0.0000	0.0000	3.8300	0.0000	0.0000
<b>Total</b>		<b>21.04</b>		<b>89.78</b>	<b>28.17</b>		<b>133.95</b>	<b>162.12</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	4.2675 in	S <sub>top</sub> =	51.14 in <sup>3</sup>	y-bar =	4.2675 in	S <sub>top</sub> =	51.14 in <sup>3</sup>
I <sub>x</sub> =	162.12 in <sup>4</sup>	S <sub>bottom</sub> =	37.99 in <sup>3</sup>	I <sub>x</sub> =	162.12 in <sup>4</sup>	S <sub>bottom</sub> =	37.99 in <sup>3</sup>
C <sub>top</sub> =	3.1700 in	A =	21.0374 in <sup>2</sup>	C <sub>top</sub> =	3.1700 in	A =	21.0374 in <sup>2</sup>
C <sub>bottom</sub> =	4.2675 in	r <sub>x</sub> =	2.7760 in	C <sub>bottom</sub> =	4.2675 in	r <sub>x</sub> =	2.7760 in
J =	2.7105 in <sup>4</sup>	Z =	52.81 in <sup>3</sup>	Z =	<b>52.81</b> in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		8.5470	4.2400	36.2393	87.7563	1.3100	14.6675	102.4238
	Web		2.9904	4.2400	12.6793	0.0574	1.3100	5.1318	5.1892
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.8000	25.2700	27.0565
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.8000	9.7200	9.7825
2 (Right)	Horizontal Leg		1.7500	6.7300	11.7775	1.7865	1.1800	2.4367	4.2232
	Vertical Leg		3.0000	4.7300	14.1900	0.0625	0.8200	2.0172	2.0797
3	Additional Plate		0.0000	4.2400	0.0000	0.0000	1.3100	0.0000	0.0000
<b>Total</b>			<b>21.04</b>		<b>89.20</b>	<b>91.51</b>		<b>59.24</b>	<b>150.75</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.5500 in	S <sub>right</sub> =	27.16 in <sup>3</sup>	x-bar =	5.5500 in	S <sub>right</sub> =	27.16 in <sup>3</sup>
I <sub>y</sub> =	150.75 in <sup>4</sup>	S <sub>left</sub> =	27.16 in <sup>3</sup>	I <sub>y</sub> =	150.75 in <sup>4</sup>	S <sub>left</sub> =	27.16 in <sup>3</sup>
C <sub>right</sub> =	5.5500 in	A =	21.0374 in <sup>2</sup>	C <sub>right</sub> =	5.5500 in	A =	21.0374 in <sup>2</sup>
C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.6769 in	C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.6769 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
<b>M</b>	158.43 k-ft	158.43 k-ft
<b>V</b>	177.28 k	177.28 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x86	<b>Bottom Angles:</b>
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.7700 in	$B_2 = L_h =$ 4.0000 in
$C_1 = d =$	7.0000 in	$C_2 = t =$ 0.5000 in
$D_1 = t_w =$	0.4800 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	$H =$ 7.4375 in
$B_3 = t =$	0.4800 in	$Gap =$ 0.4375 in

\*select from dropdown list

Coped Stringer S2-11 @ FB D1

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	8.5470	7.0525	60.2777	0.4223	2.7850	66.2947	66.7170
	Web	2.9904	3.5525	10.6234	9.6722	0.7150	1.5286	11.2007
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	4.0175	56.4897	56.5627
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	1.2675	9.6386	27.6386
3	Additional Plate	0.0000	0.4375	0.0000	0.0000	3.8300	0.0000	0.0000
<b>Total</b>		<b>21.04</b>		<b>89.78</b>	<b>28.17</b>		<b>133.95</b>	<b>162.12</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	4.2675 in	S <sub>top</sub> =	51.14 in <sup>3</sup>	y-bar =	4.2675 in	S <sub>top</sub> =	51.14 in <sup>3</sup>
I <sub>x</sub> =	162.12 in <sup>4</sup>	S <sub>bottom</sub> =	37.99 in <sup>3</sup>	I <sub>x</sub> =	162.12 in <sup>4</sup>	S <sub>bottom</sub> =	37.99 in <sup>3</sup>
C <sub>top</sub> =	3.1700 in	A =	21.0374 in <sup>2</sup>	C <sub>top</sub> =	3.1700 in	A =	21.0374 in <sup>2</sup>
C <sub>bottom</sub> =	4.2675 in	r <sub>x</sub> =	2.7760 in	C <sub>bottom</sub> =	4.2675 in	r <sub>x</sub> =	2.7760 in
J =	2.7105 in <sup>4</sup>	Z =	52.81 in <sup>3</sup>	Z =	52.81 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		8.5470	4.2400	36.2393	87.7563	1.3100	14.6675	102.4238
	Web		2.9904	4.2400	12.6793	0.0574	1.3100	5.1318	5.1892
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.8000	25.2700	27.0565
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.8000	9.7200	9.7825
2 (Right)	Horizontal Leg		1.7500	6.7300	11.7775	1.7865	1.1800	2.4367	4.2232
	Vertical Leg		3.0000	4.7300	14.1900	0.0625	0.8200	2.0172	2.0797
3	Additional Plate		0.0000	4.2400	0.0000	0.0000	1.3100	0.0000	0.0000
<b>Total</b>			<b>21.04</b>		<b>89.20</b>	<b>91.51</b>		<b>59.24</b>	<b>150.75</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.5500 in	S <sub>right</sub> =	27.16 in <sup>3</sup>	x-bar =	5.5500 in	S <sub>right</sub> =	27.16 in <sup>3</sup>
I <sub>y</sub> =	150.75 in <sup>4</sup>	S <sub>left</sub> =	27.16 in <sup>3</sup>	I <sub>y</sub> =	150.75 in <sup>4</sup>	S <sub>left</sub> =	27.16 in <sup>3</sup>
C <sub>right</sub> =	5.5500 in	A =	21.0374 in <sup>2</sup>	C <sub>right</sub> =	5.5500 in	A =	21.0374 in <sup>2</sup>
C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.6769 in	C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.6769 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	158.43 k-ft	158.43 k-ft
V	177.28 k	177.28 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x86	<b>Bottom Angles:</b>	
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7700 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	9.2500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.4800 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	9.7500 in
$B_3 = t =$	0.4800 in	$Gap =$	0.5000 in

\*select from dropdown list

Coped Stringer S3-11 @ FB D1

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	8.5470	9.3650	80.0427	0.4223	4.0203	138.1421	138.5643
	Web	4.0704	4.7400	19.2937	24.3920	0.6047	1.4885	25.8805
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.0947	90.8467	90.9196
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	2.3447	32.9863	50.9863
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	4.8447	0.0000	0.0000
<b>Total</b>		<b>22.12</b>		<b>118.21</b>	<b>42.89</b>		<b>263.46</b>	<b>306.35</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	5.3447	in	S <sub>top</sub> =	69.54	in <sup>3</sup>	y-bar =	5.3447	in	S <sub>top</sub> =	69.54	in <sup>3</sup>
I <sub>x</sub> =	306.35	in <sup>4</sup>	S <sub>bottom</sub> =	57.32	in <sup>3</sup>	I <sub>x</sub> =	306.35	in <sup>4</sup>	S <sub>bottom</sub> =	57.32	in <sup>3</sup>
C <sub>top</sub> =	4.4053	in	A =	22.1174	in <sup>2</sup>	C <sub>top</sub> =	4.4053	in	A =	22.1174	in <sup>2</sup>
C <sub>bottom</sub> =	5.3447	in	r <sub>x</sub> =	3.7217	in	C <sub>bottom</sub> =	5.3447	in	r <sub>x</sub> =	3.7217	in
J =	2.7934	in <sup>4</sup>	Z =	75.49	in <sup>3</sup>	Z =	75.49	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		8.5470	4.2400	36.2393	87.7563	1.3100	14.6675	102.4238
	Web		4.0704	4.2400	17.2585	0.0782	1.3100	6.9852	7.0634
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.8000	25.2700	27.0565
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.8000	9.7200	9.7825
2 (Right)	Horizontal Leg		1.7500	6.7300	11.7775	1.7865	1.1800	2.4367	4.2232
	Vertical Leg		3.0000	4.7300	14.1900	0.0625	0.8200	2.0172	2.0797
3	Additional Plate		0.0000	4.2400	0.0000	0.0000	1.3100	0.0000	0.0000
<b>Total</b>			<b>22.12</b>		<b>93.78</b>	<b>91.53</b>		<b>61.10</b>	<b>152.63</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.5500	in	S <sub>right</sub> =	27.50	in <sup>3</sup>	x-bar =	5.5500	in	S <sub>right</sub> =	27.50	in <sup>3</sup>
I <sub>y</sub> =	152.63	n <sup>4</sup>	S <sub>left</sub> =	27.50	in <sup>3</sup>	I <sub>y</sub> =	152.63	n <sup>4</sup>	S <sub>left</sub> =	27.50	in <sup>3</sup>
C <sub>right</sub> =	5.5500	in	A =	22.1174	in <sup>2</sup>	C <sub>right</sub> =	5.5500	in	A =	22.1174	in <sup>2</sup>
C <sub>left</sub> =	5.5500	in	r <sub>y</sub> =	2.6269	in	C <sub>left</sub> =	5.5500	in	r <sub>y</sub> =	2.6269	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	226.47 k-ft	226.47 k-ft
V	199.83 k	199.83 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



Made By CTG  
Checked By DMP

Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x65	<b>Bottom Angles:</b>	
$A_1 = b_f =$	7.5900 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7500 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	10.0000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.4500 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	H =	10.5000 in
$B_3 = t =$	0.4500 in	Gap =	0.5000 in

\*select from dropdown list

Coped Stringer S4-11 @ FB D1

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	5.6925	10.1250	57.6366	0.2668	5.0697	146.3107	146.5775
	Web	4.1625	5.1250	21.3328	29.6795	0.0697	0.0203	29.6997
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	4.8053	80.8165	80.8894
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	2.0553	25.3443	43.3443
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	4.5553	0.0000	0.0000
<b>Total</b>		<b>19.36</b>		<b>97.84</b>	<b>48.02</b>		<b>252.49</b>	<b>300.51</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	5.0553	in	S <sub>top</sub> =	55.19	in <sup>3</sup>	y-bar =	5.0553	in	S <sub>top</sub> =	55.19	in <sup>3</sup>
I <sub>x</sub> =	300.51	in <sup>4</sup>	S <sub>bott.</sub> =	59.45	in <sup>3</sup>	I <sub>x</sub> =	300.51	in <sup>4</sup>	S <sub>bott.</sub> =	59.45	in <sup>3</sup>
C <sub>top</sub> =	5.4447	in	A =	19.3550	in <sup>2</sup>	C <sub>top</sub> =	5.4447	in	A =	19.3550	in <sup>2</sup>
C <sub>bottom</sub> =	5.0553	in	r <sub>x</sub> =	3.9403	in	C <sub>bottom</sub> =	5.0553	in	r <sub>x</sub> =	3.9403	in
J =	2.1400	in <sup>4</sup>	Z =	67.94	in <sup>3</sup>	Z =	67.94	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		5.6925	4.2250	24.0508	27.3278	0.0000	0.0000	27.3278
	Web		4.1625	4.2250	17.5866	0.0702	0.0000	0.0000	0.0702
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.4750	10.7198	12.5063
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.4750	0.6769	0.7394
2 (Right)	Horizontal Leg		1.7500	6.7000	11.7250	1.7865	2.4750	10.7198	12.5063
	Vertical Leg		3.0000	4.7000	14.1000	0.0625	0.4750	0.6769	0.7394
3	Additional Plate		0.0000	4.2250	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>19.36</b>		<b>81.77</b>	<b>31.10</b>		<b>22.79</b>	<b>53.89</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	4.2250	in	S <sub>right</sub> =	12.75	in <sup>3</sup>	x-bar =	4.2250	in	S <sub>right</sub> =	12.75	in <sup>3</sup>
I <sub>y</sub> =	53.89	in <sup>4</sup>	S <sub>left</sub> =	12.75	in <sup>3</sup>	I <sub>y</sub> =	53.89	in <sup>4</sup>	S <sub>left</sub> =	12.75	in <sup>3</sup>
C <sub>right</sub> =	4.2250	in	A =	19.3550	in <sup>2</sup>	C <sub>right</sub> =	4.2250	in	A =	19.3550	in <sup>2</sup>
C <sub>left</sub> =	4.2250	in	r <sub>y</sub> =	1.6686	in	C <sub>left</sub> =	4.2250	in	r <sub>y</sub> =	1.6686	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	203.82 k-ft	203.82 k-ft
V	201.75 k	201.75 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x65	<b>Bottom Angles:</b>	
$A_1 = b_f =$	7.5900 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7500 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	10.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.4500 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	11.0000 in
$B_3 = t =$	0.4500 in	$GAP =$	0.5000 in

\*select from dropdown list

Coped Stringer S5-11 @ FB D1

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	5.6925	10.6250	60.4828	0.2668	5.3676	164.0051	164.2719
	Web	4.3875	5.3750	23.5828	34.7572	0.1176	0.0606	34.8179
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.0074	87.7605	87.8334
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	2.2574	30.5761	48.5761
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	4.7574	0.0000	0.0000
<b>Total</b>		<b>19.58</b>		<b>102.94</b>	<b>53.10</b>		<b>282.40</b>	<b>335.50</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	5.2574	in	S <sub>top</sub> =	58.42	in <sup>3</sup>	y-bar =	5.2574	in	S <sub>top</sub> =	58.42	in <sup>3</sup>
I <sub>x</sub> =	335.50	in <sup>4</sup>	S <sub>bottom</sub> =	63.81	in <sup>3</sup>	I <sub>x</sub> =	335.50	in <sup>4</sup>	S <sub>bottom</sub> =	63.81	in <sup>3</sup>
C <sub>top</sub> =	5.7426	in	A =	19.5800	in <sup>2</sup>	C <sub>top</sub> =	5.7426	in	A =	19.5800	in <sup>2</sup>
C <sub>bottom</sub> =	5.2574	in	r <sub>x</sub> =	4.1394	in	C <sub>bottom</sub> =	5.2574	in	r <sub>x</sub> =	4.1394	in
J =	2.1552	in <sup>4</sup>	Z =	72.03	in <sup>3</sup>	Z =	72.03	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	5.6925	4.2250	24.0508	27.3278	0.0000	0.0000	27.3278
	Web	4.3875	4.2250	18.5372	0.0740	0.0000	0.0000	0.0740
2 (Left)	Horizontal Leg	1.7500	1.7500	3.0625	1.7865	2.4750	10.7198	12.5063
	Vertical Leg	3.0000	3.7500	11.2500	0.0625	0.4750	0.6769	0.7394
2 (Right)	Horizontal Leg	1.7500	6.7000	11.7250	1.7865	2.4750	10.7198	12.5063
	Vertical Leg	3.0000	4.7000	14.1000	0.0625	0.4750	0.6769	0.7394
3	Additional Plate	0.0000	4.2250	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>19.58</b>		<b>82.73</b>	<b>31.10</b>		<b>22.79</b>	<b>53.89</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	4.2250	in	S <sub>right</sub> =	12.76	in <sup>3</sup>	x-bar =	4.2250	in	S <sub>right</sub> =	12.76	in <sup>3</sup>
I <sub>y</sub> =	53.89	in <sup>4</sup>	S <sub>left</sub> =	12.76	in <sup>3</sup>	I <sub>y</sub> =	53.89	in <sup>4</sup>	S <sub>left</sub> =	12.76	in <sup>3</sup>
C <sub>right</sub> =	4.2250	in	A =	19.5800	in <sup>2</sup>	C <sub>right</sub> =	4.2250	in	A =	19.5800	in <sup>2</sup>
C <sub>left</sub> =	4.2250	in	r <sub>y</sub> =	1.6591	in	C <sub>left</sub> =	4.2250	in	r <sub>y</sub> =	1.6591	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	216.09 k-ft	216.09 k-ft
V	206.45 k	206.45 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



Made By CTG  
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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x65	<b>Bottom Angles:</b>	
$A_1 = b_f =$	7.5900 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7500 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	11.0000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.4500 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	11.5000 in
$B_3 = t =$	0.4500 in	$GAP =$	0.5000 in

\*select from dropdown list

Coped Stringer S5-11 @ FB D1

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	5.6925	11.1250	63.3291	0.2668	5.6643	182.6392	182.9060
	Web	4.6125	5.6250	25.9453	40.3834	0.1643	0.1245	40.5079
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.2107	95.0303	95.1032
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	2.4607	36.3306	54.3306
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	4.9607	0.0000	0.0000
<b>Total</b>		<b>19.81</b>		<b>108.15</b>	<b>58.72</b>		<b>314.12</b>	<b>372.85</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	5.4607 in	S <sub>top</sub> =	61.74 in <sup>3</sup>	y-bar =	5.4607 in	S <sub>top</sub> =	61.74 in <sup>3</sup>
I <sub>x</sub> =	372.85 in <sup>4</sup>	S <sub>bottom</sub> =	68.28 in <sup>3</sup>	I <sub>x</sub> =	372.85 in <sup>4</sup>	S <sub>bottom</sub> =	68.28 in <sup>3</sup>
C <sub>top</sub> =	6.0393 in	A =	19.8050 in <sup>2</sup>	C <sub>top</sub> =	6.0393 in	A =	19.8050 in <sup>2</sup>
C <sub>bottom</sub> =	5.4607 in	r <sub>x</sub> =	4.3389 in	C <sub>bottom</sub> =	5.4607 in	r <sub>x</sub> =	4.3389 in
J =	2.1704 in <sup>4</sup>	Z =	76.22 in <sup>3</sup>			Z =	76.22 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		5.6925	4.2250	24.0508	27.3278	0.0000	0.0000	27.3278
	Web		4.6125	4.2250	19.4878	0.0778	0.0000	0.0000	0.0778
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.4750	10.7198	12.5063
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.4750	0.6769	0.7394
2 (Right)	Horizontal Leg		1.7500	6.7000	11.7250	1.7865	2.4750	10.7198	12.5063
	Vertical Leg		3.0000	4.7000	14.1000	0.0625	0.4750	0.6769	0.7394
3	Additional Plate		0.0000	4.2250	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>19.81</b>		<b>83.68</b>	<b>31.10</b>		<b>22.79</b>	<b>53.90</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.2250 in	S <sub>right</sub> =	12.76 in <sup>3</sup>	x-bar =	4.2250 in	S <sub>right</sub> =	12.76 in <sup>3</sup>
I <sub>y</sub> =	53.90 in <sup>4</sup>	S <sub>left</sub> =	12.76 in <sup>3</sup>	I <sub>y</sub> =	53.90 in <sup>4</sup>	S <sub>left</sub> =	12.76 in <sup>3</sup>
C <sub>right</sub> =	4.2250 in	A =	19.8050 in <sup>2</sup>	C <sub>right</sub> =	4.2250 in	A =	19.8050 in <sup>2</sup>
C <sub>left</sub> =	4.2250 in	r <sub>y</sub> =	1.6497 in	C <sub>left</sub> =	4.2250 in	r <sub>y</sub> =	1.6497 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	228.66 k-ft	228.66 k-ft
V	211.15 k	211.15 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x65	<b>Bottom Angles:</b>	
$A_1 = b_f =$	7.5900 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7500 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	11.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.4500 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	12.0000 in
$B_3 = t =$	0.4500 in	$GAP =$	0.5000 in

\*select from dropdown list

Coped Stringer S7-11 @ FB D1

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	5.6925	11.6250	66.1753	0.2668	5.9600	202.2044	202.4713
	Web	4.8375	5.8750	28.4203	46.5861	0.2100	0.2133	46.7994
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.4150	102.6291	102.7020
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	2.6650	42.6144	60.6144
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.1650	0.0000	0.0000
<b>Total</b>		<b>20.03</b>		<b>113.47</b>	<b>64.93</b>		<b>347.66</b>	<b>412.59</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	5.6650 in	S <sub>top</sub> =	65.13 in <sup>3</sup>	y-bar =	5.6650 in	S <sub>top</sub> =	65.13 in <sup>3</sup>
I <sub>x</sub> =	412.59 in <sup>4</sup>	S <sub>bottom</sub> =	72.83 in <sup>3</sup>	I <sub>x</sub> =	412.59 in <sup>4</sup>	S <sub>bottom</sub> =	72.83 in <sup>3</sup>
C <sub>top</sub> =	6.3350 in	A =	20.0300 in <sup>2</sup>	C <sub>top</sub> =	6.3350 in	A =	20.0300 in <sup>2</sup>
C <sub>bottom</sub> =	5.6650 in	r <sub>x</sub> =	4.5386 in	C <sub>bottom</sub> =	5.6650 in	r <sub>x</sub> =	4.5386 in
J =	2.1855 in <sup>4</sup>	Z =	80.50 in <sup>3</sup>			Z =	80.50 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		5.6925	4.2250	24.0508	27.3278	0.0000	0.0000	27.3278
	Web		4.8375	4.2250	20.4384	0.0816	0.0000	0.0000	0.0816
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.4750	10.7198	12.5063
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.4750	0.6769	0.7394
2 (Right)	Horizontal Leg		1.7500	6.7000	11.7250	1.7865	2.4750	10.7198	12.5063
	Vertical Leg		3.0000	4.7000	14.1000	0.0625	0.4750	0.6769	0.7394
3	Additional Plate		0.0000	4.2250	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>20.03</b>		<b>84.63</b>	<b>31.11</b>		<b>22.79</b>	<b>53.90</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.2250 in	S <sub>right</sub> =	12.76 in <sup>3</sup>	x-bar =	4.2250 in	S <sub>right</sub> =	12.76 in <sup>3</sup>
I <sub>y</sub> =	53.90 in <sup>4</sup>	S <sub>left</sub> =	12.76 in <sup>3</sup>	I <sub>y</sub> =	53.90 in <sup>4</sup>	S <sub>left</sub> =	12.76 in <sup>3</sup>
C <sub>right</sub> =	4.2250 in	A =	20.0300 in <sup>2</sup>	C <sub>right</sub> =	4.2250 in	A =	20.0300 in <sup>2</sup>
C <sub>left</sub> =	4.2250 in	r <sub>y</sub> =	1.6404 in	C <sub>left</sub> =	4.2250 in	r <sub>y</sub> =	1.6404 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	241.50 k-ft	241.50 k-ft
V	215.85 k	215.85 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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Date 3/16/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

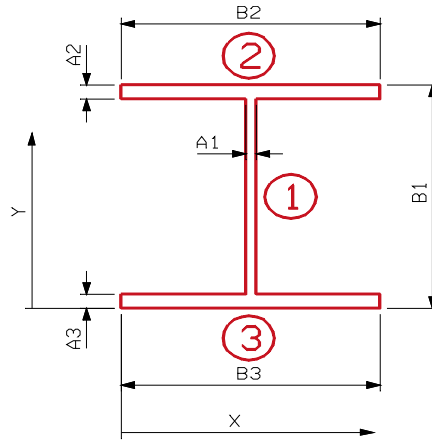
Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 16.5000$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.7500$  in

$d_o = 15.0000$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F2-11 @ FB C9**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		5.6250	8.2500	46.4063	105.4688	0.2436	0.3337	105.8024
2	Top Flange		6.0000	16.1250	96.7500	0.2813	8.1186	395.4658	395.7470
3	Bottom Flange		6.5625	0.3750	2.4609	0.3076	7.6314	382.1930	382.5006
<b>Total</b>			<b>18.19</b>		<b>145.62</b>	<b>106.06</b>		<b>777.99</b>	<b>884.05</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
y-bar =	8.0064	in	$S_{top} =$	104.08	in <sup>3</sup>	y-bar =	8.0064	in	$S_{top} =$	104.08	in <sup>3</sup>
$I_x =$	884.05	in <sup>4</sup>	$S_{bott.} =$	110.42	in <sup>3</sup>	$I_x =$	884.05	in <sup>4</sup>	$S_{bott.} =$	110.42	in <sup>3</sup>
$C_{top} =$	8.4936	in	A =	18.1875	in <sup>2</sup>	$C_{top} =$	8.4936	in	A =	18.1875	in <sup>2</sup>
$C_{bottom} =$	8.0064	in	$r_x =$	6.9719	in	$C_{bottom} =$	8.0064	in	$r_x =$	6.9719	in
J =	2.6191	in <sup>4</sup>	Z =	119.81	in <sup>3</sup>	Z =	119.81	in <sup>3</sup>			



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Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		5.6250	4.3750	24.6094	0.0659	0.0000	0.0000	0.0659
2	Top Flange		6.0000	4.3750	26.2500	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange		6.5625	4.3750	28.7109	41.8701	0.0000	0.0000	41.8701
<b>Total</b>			<b>18.19</b>		<b>79.57</b>	<b>73.94</b>		<b>0.00</b>	<b>73.94</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.3750	in	S <sub>right</sub> = 16.90 in <sup>3</sup>	x-bar =	4.3750	in	S <sub>right</sub> = 16.90 in <sup>3</sup>
I <sub>y</sub> =	73.94	in <sup>4</sup>	S <sub>left</sub> = 16.90 in <sup>3</sup>	I <sub>y</sub> =	73.94	in <sup>4</sup>	S <sub>left</sub> = 16.90 in <sup>3</sup>
C <sub>right</sub> =	4.3750	in	A = 18.1875 in <sup>2</sup>	C <sub>right</sub> =	4.3750	in	A = 18.1875 in <sup>2</sup>
C <sub>left</sub> =	4.3750	in	r <sub>y</sub> = 2.0162 in	C <sub>left</sub> =	4.3750	in	r <sub>y</sub> = 2.0162 in

Non-composite Capacities*		
	AB	AI
M	359.44 k-ft	359.44 k-ft
V	117.45 k	117.45 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear





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Date 3/26/2012

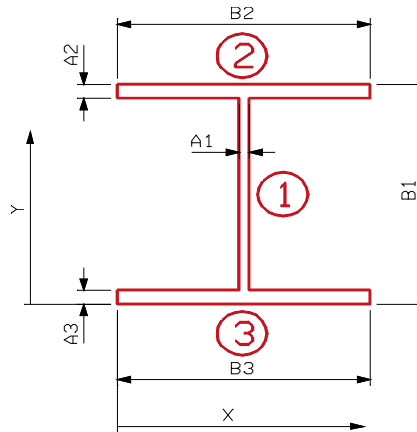
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 35.5000$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F2-11 Typ**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		12.7500	17.7500	226.3125	1228.2500	0.0000	0.0000	1228.2500
2	Top Flange		6.0000	35.1250	210.7500	0.2813	17.3750	1811.3438	1811.6250
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	17.3750	1811.3438	1811.6250
<b>Total</b>			<b>24.75</b>		<b>439.31</b>	<b>1228.81</b>		<b>3622.69</b>	<b>4851.50</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	17.7500 in	$S_{top} =$	273.32 in <sup>3</sup>	y-bar =	17.7500 in	$S_{top} =$	273.32 in <sup>3</sup>
$I_x =$	4851.50 in <sup>4</sup>	$S_{bott.} =$	273.32 in <sup>3</sup>	$I_x =$	4851.50 in <sup>4</sup>	$S_{bott.} =$	273.32 in <sup>3</sup>
$C_{top} =$	17.7500 in	A =	24.7500 in <sup>2</sup>	$C_{top} =$	17.7500 in	A =	24.7500 in <sup>2</sup>
$C_{bottom} =$	17.7500 in	$r_x =$	14.0007 in	$C_{bottom} =$	17.7500 in	$r_x =$	14.0007 in
J =	2.8477 in <sup>4</sup>	Z =	316.88 in <sup>3</sup>	Z =	<b>316.88</b> in <sup>3</sup>		



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Date 3/16/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	12.7500	4.0000	51.0000	0.1494	0.0000	0.0000	0.1494
2	Top Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>		<b>24.75</b>		<b>99.00</b>	<b>64.15</b>		<b>0.00</b>	<b>64.15</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 16.04 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 16.04 in <sup>3</sup>
I <sub>y</sub> =	64.15	in <sup>4</sup>	S <sub>left</sub> = 16.04 in <sup>3</sup>	I <sub>y</sub> =	64.15	in <sup>4</sup>	S <sub>left</sub> = 16.04 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 24.7500 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 24.7500 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.6099 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.6099 in

Non-composite Capacities*		
	AB	AI
M	950.63 k-ft	950.63 k-ft
V	202.41 k	202.41 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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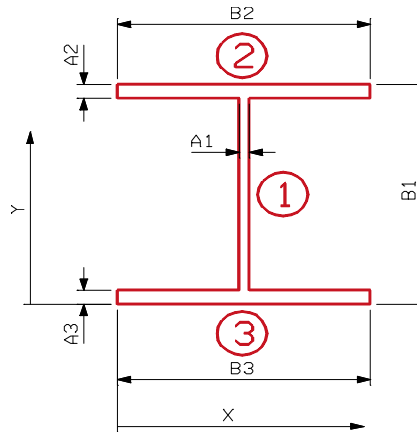
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 28.5625$  in
- $A_2 = t_f = 1.2500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 1.2500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F1A-12**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		9.7734	14.2813	139.5769	553.2205	0.0000	0.0000	553.2205
2	Top Flange		10.0000	27.9375	279.3750	1.3021	13.6563	1864.9316	1866.2337
3	Bottom Flange		10.0000	0.6250	6.2500	1.3021	13.6563	1864.9316	1866.2337
<b>Total</b>			<b>29.77</b>		<b>425.20</b>	<b>555.82</b>		<b>3729.86</b>	<b>4285.69</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
y-bar =	14.2813	in	$S_{top} =$	300.09	in <sup>3</sup>	y-bar =	14.2813	in	$S_{top} =$	300.09	in <sup>3</sup>
$I_x =$	4285.69	in <sup>4</sup>	$S_{bott.} =$	300.09	in <sup>3</sup>	$I_x =$	4285.69	in <sup>4</sup>	$S_{bott.} =$	300.09	in <sup>3</sup>
$C_{top} =$	14.2813	in	A =	29.7734	in <sup>2</sup>	$C_{top} =$	14.2813	in	A =	29.7734	in <sup>2</sup>
$C_{bottom} =$	14.2813	in	$r_x =$	11.9976	in	$C_{bottom} =$	14.2813	in	$r_x =$	11.9976	in
J =	10.8748	in <sup>4</sup>	Z =	336.81	in <sup>3</sup>	J =	10.8748	in <sup>4</sup>	Z =	336.81	in <sup>3</sup>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	9.7734	4.0000	39.0938	0.1145	0.0000	0.0000	0.1145
2	Top Flange	10.0000	4.0000	40.0000	53.3333	0.0000	0.0000	53.3333
3	Bottom Flange	10.0000	4.0000	40.0000	53.3333	0.0000	0.0000	53.3333
<b>Total</b>		<b>29.77</b>		<b>119.09</b>	<b>106.78</b>		<b>0.00</b>	<b>106.78</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 26.70 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 26.70 in <sup>3</sup>
I <sub>y</sub> =	106.78	in <sup>4</sup>	S <sub>left</sub> = 26.70 in <sup>3</sup>	I <sub>y</sub> =	106.78	in <sup>4</sup>	S <sub>left</sub> = 26.70 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 29.7734 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 29.7734 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.8938 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.8938 in

Non-composite Capacities*		
	AB	AI
M	1010.42 k-ft	1010.42 k-ft
V	204.07 k	204.07 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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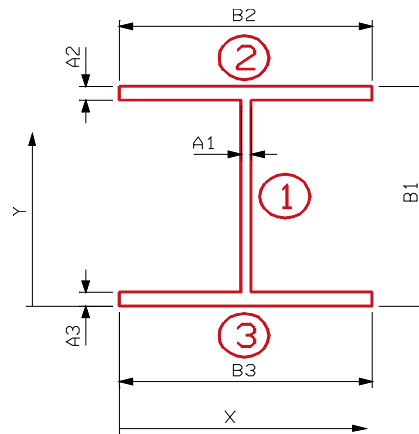
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 29.2813$  in
- $A_2 = t_f = 1.2500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 1.2500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F1B-12 Avg**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		10.0430	14.6406	147.0353	600.2644	0.0000	0.0000	600.2644
2	Top Flange		10.0000	28.6563	286.5625	1.3021	14.0156	1964.3774	1965.6795
3	Bottom Flange		10.0000	0.6250	6.2500	1.3021	14.0156	1964.3774	1965.6795
<b>Total</b>			<b>30.04</b>		<b>439.85</b>	<b>602.87</b>		<b>3928.75</b>	<b>4531.62</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	14.6406	in	$S_{top} = 309.52$	$in^3$	y-bar =	14.6406	in	$S_{top} = 309.52$	$in^3$		
$I_x =$	4531.62	$n^4$	$S_{bott.} = 309.52$	$in^3$	$I_x =$	4531.62	$n^4$	$S_{bott.} = 309.52$	$in^3$		
$C_{top} =$	14.6406	in	A =	30.0430	$in^2$	$C_{top} =$	14.6406	in	A =	30.0430	$in^2$
$C_{bottom} =$	14.6406	in	$r_x =$	12.2816	in	$C_{bottom} =$	14.6406	in	$r_x =$	12.2816	in
J =	10.8874	$in^4$	Z =	347.55	$in^3$	Z =	347.55	$in^3$			



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Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		10.0430	4.0000	40.1719	0.1177	0.0000	0.0000	0.1177
2	Top Flange		10.0000	4.0000	40.0000	53.3333	0.0000	0.0000	53.3333
3	Bottom Flange		10.0000	4.0000	40.0000	53.3333	0.0000	0.0000	53.3333
<b>Total</b>			<b>30.04</b>		<b>120.17</b>	<b>106.78</b>		<b>0.00</b>	<b>106.78</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	4.0000	in	S <sub>right</sub> =	26.70	in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> =	26.70	in <sup>3</sup>
I <sub>y</sub> =	106.78	in <sup>4</sup>	S <sub>left</sub> =	26.70	in <sup>3</sup>	I <sub>y</sub> =	106.78	in <sup>4</sup>	S <sub>left</sub> =	26.70	in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A =	30.0430	in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A =	30.0430	in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> =	1.8853	in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> =	1.8853	in

Non-composite Capacities*		
	AB	AI
M	1042.66 k-ft	1042.66 k-ft
V	207.62 k	207.62 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x101	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	7.2500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	7.8125 in
$B_3 = t =$	0.5000 in	$GAP =$	0.5625 in

\*select from dropdown list

Coped Stringer S1-12 @ FB D1

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	7.4125	72.9390	0.5248	2.8023	77.2736	77.7984
	Web	3.2250	3.7875	12.2147	11.1807	0.8227	2.1827	13.3634
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	4.3602	66.5391	66.6120
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	1.6102	15.5561	33.5561
3	Additional Plate	0.0000	0.5625	0.0000	0.0000	4.0477	0.0000	0.0000
<b>Total</b>		<b>22.57</b>		<b>104.03</b>	<b>29.78</b>		<b>161.55</b>	<b>191.33</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties					As-Inspected Section Properties						
y-bar =	4.6102	in	S <sub>top</sub> =	59.75	in <sup>3</sup>	y-bar =	4.6102	in	S <sub>top</sub> =	59.75	in <sup>3</sup>
I <sub>x</sub> =	191.33	in <sup>4</sup>	S <sub>bottom</sub> =	41.50	in <sup>3</sup>	I <sub>x</sub> =	191.33	in <sup>4</sup>	S <sub>bottom</sub> =	41.50	in <sup>3</sup>
C <sub>top</sub> =	3.2023	in	A =	22.5650	in <sup>2</sup>	C <sub>top</sub> =	3.2023	in	A =	22.5650	in <sup>2</sup>
C <sub>bottom</sub> =	4.6102	in	r <sub>x</sub> =	2.9119	in	C <sub>bottom</sub> =	4.6102	in	r <sub>x</sub> =	2.9119	in
J =	3.1596	in <sup>4</sup>	Z =	59.09	in <sup>3</sup>	Z =	59.09	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	4.2500	41.8200	124.0578	1.9000	35.5224	159.5802
	Web		3.2250	4.2500	13.7063	0.0672	1.9000	11.6423	11.7094
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.4000	33.8800	35.6665
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.4000	17.2800	17.3425
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.6000	0.6300	2.4165
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.4000	5.8800	5.9425
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	1.9000	0.0000	0.0000
<b>Total</b>			<b>22.57</b>		<b>95.90</b>	<b>127.82</b>		<b>104.83</b>	<b>232.66</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	6.1500	in	S <sub>right</sub> =	37.83	in <sup>3</sup>	x-bar =	6.1500	in	S <sub>right</sub> =	37.83	in <sup>3</sup>
I <sub>y</sub> =	232.66	in <sup>4</sup>	S <sub>left</sub> =	37.83	in <sup>3</sup>	I <sub>y</sub> =	232.66	in <sup>4</sup>	S <sub>left</sub> =	37.83	in <sup>3</sup>
C <sub>right</sub> =	6.1500	in	A =	22.5650	in <sup>2</sup>	C <sub>right</sub> =	6.1500	in	A =	22.5650	in <sup>2</sup>
C <sub>left</sub> =	6.1500	in	r <sub>y</sub> =	3.2110	in	C <sub>left</sub> =	6.1500	in	r <sub>y</sub> =	3.2110	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	177.27 k-ft	177.27 k-ft
V	182.18 k	182.18 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x101	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	5.0000 in
$C_1 = d =$	6.5000 in	$C_2 = t =$	0.7500 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	6.8750 in
$B_3 = t =$	0.5000 in	$Gap =$	0.3750 in

\*select from dropdown list

Coped Stringer S1-12 @ FB D2

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	6.4750	63.7140	0.5248	2.8300	78.8097	79.3345
	Web	2.8500	3.2250	9.1913	7.7164	0.4200	0.5027	8.2190
2	Horizontal Legs	6.3750	0.3750	2.3906	0.2988	3.2700	68.1657	68.4645
	Vertical Legs	9.0000	3.0000	27.0000	27.0000	0.6450	3.7438	30.7438
3	Additional Plate	0.0000	0.3750	0.0000	0.0000	3.2700	0.0000	0.0000
<b>Total</b>		<b>28.07</b>		<b>102.30</b>	<b>35.54</b>		<b>151.22</b>	<b>186.76</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties					As-Inspected Section Properties						
y-bar =	3.6450	in	S <sub>top</sub> =	57.82	in <sup>3</sup>	y-bar =	3.6450	in	S <sub>top</sub> =	57.82	in <sup>3</sup>
I <sub>x</sub> =	186.76	in <sup>4</sup>	S <sub>bott.</sub> =	51.24	in <sup>3</sup>	I <sub>x</sub> =	186.76	in <sup>4</sup>	S <sub>bott.</sub> =	51.24	in <sup>3</sup>
C <sub>top</sub> =	3.2300	in	A =	28.0650	in <sup>2</sup>	C <sub>top</sub> =	3.2300	in	A =	28.0650	in <sup>2</sup>
C <sub>bottom</sub> =	3.6450	in	r <sub>x</sub> =	2.5797	in	C <sub>bottom</sub> =	3.6450	in	r <sub>x</sub> =	2.5797	in
J =	5.2195	in <sup>4</sup>	Z =	66.81	in <sup>3</sup>	Z =	66.81	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	5.2500	51.6600	124.0578	0.9000	7.9704	132.0282
	Web		2.8500	5.2500	14.9625	0.0594	0.9000	2.3085	2.3679
2 (Left)	Horizontal Leg		3.1875	2.1250	6.7734	4.7979	4.0250	51.6395	56.4373
	Vertical Leg		4.5000	4.6250	20.8125	0.2109	1.5250	10.4653	10.6763
2 (Right)	Horizontal Leg		3.1875	8.3750	26.6953	4.7979	2.2250	15.7801	20.5780
	Vertical Leg		4.5000	5.8750	26.4375	0.2109	0.2750	0.3403	0.5513
3	Additional Plate		0.0000	5.2500	0.0000	0.0000	0.9000	0.0000	0.0000
<b>Total</b>			<b>28.07</b>		<b>147.34</b>	<b>134.13</b>		<b>88.50</b>	<b>222.64</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	6.1500	in	S <sub>right</sub> =	36.20	in <sup>3</sup>	x-bar =	6.1500	in	S <sub>right</sub> =	36.20	in <sup>3</sup>
I <sub>y</sub> =	222.64	in <sup>4</sup>	S <sub>left</sub> =	36.20	in <sup>3</sup>	I <sub>y</sub> =	222.64	in <sup>4</sup>	S <sub>left</sub> =	36.20	in <sup>3</sup>
C <sub>right</sub> =	6.1500	in	A =	28.0650	in <sup>2</sup>	C <sub>right</sub> =	6.1500	in	A =	28.0650	in <sup>2</sup>
C <sub>left</sub> =	6.1500	in	r <sub>y</sub> =	2.8166	in	C <sub>left</sub> =	6.1500	in	r <sub>y</sub> =	2.8166	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	200.43 k-ft	200.43 k-ft
V	223.94 k	223.94 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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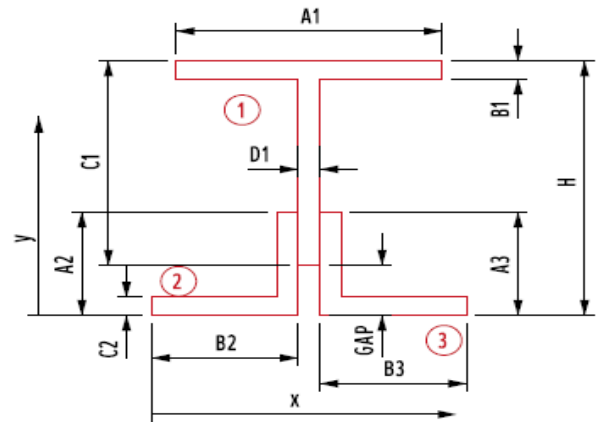
Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W21x101	Left Angle:	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	7.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in	Right Angle:	
		$A_3 = L_v =$	6.0000 in
		$B_3 = L_h =$	6.0000 in
		$C_3 = t =$	0.5000 in
		Miscellaneous:	
		H =	8.0000 in
		Gap =	0.5000 in



**Coped Stringer S1-12 @ FB D3**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	7.6000	74.7840	0.5248	3.0915	94.0442	94.5690
	Web		3.3500	3.8500	12.8975	12.5318	0.6585	1.4527	13.9845
2	Horizontal Legs		1.7500	0.2500	0.4375	0.0365	4.2585	31.7360	31.7725
	Vertical Legs		3.0000	3.0000	9.0000	9.0000	1.5085	6.8268	15.8268
3	Horizontal Legs		2.7500	0.2500	0.6875	0.0573	4.2585	49.8709	49.9282
	Vertical Legs		3.0000	3.0000	9.0000	9.0000	1.5085	6.8268	15.8268
<b>Total</b>			<b>23.69</b>		<b>106.81</b>	<b>31.15</b>		<b>190.76</b>	<b>221.91</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	4.5085 in	S <sub>top</sub> =	63.56 in <sup>3</sup>	y-bar =	4.5085 in	S <sub>top</sub> =	63.56 in <sup>3</sup>
I <sub>x</sub> =	221.91 in <sup>4</sup>	S <sub>bottom</sub> =	49.22 in <sup>3</sup>	I <sub>x</sub> =	221.91 in <sup>4</sup>	S <sub>bottom</sub> =	49.22 in <sup>3</sup>
C <sub>top</sub> =	3.4915 in	A =	23.6900 in <sup>2</sup>	C <sub>top</sub> =	3.4915 in	A =	23.6900 in <sup>2</sup>
C <sub>bottom</sub> =	4.5085 in	r <sub>x</sub> =	3.0606 in	C <sub>bottom</sub> =	4.5085 in	r <sub>x</sub> =	3.0606 in
J =	3.2534 in <sup>4</sup>	Z =	66.23 in <sup>3</sup>	Z =	66.23 in <sup>3</sup>		



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Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	4.2500	41.8200	124.0578	0.2216	0.4833	124.5411
	Web		3.3500	4.2500	14.2375	0.0698	0.2216	0.1645	0.2343
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.7216	12.9626	14.7490
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.7216	1.5622	1.6247
3 (Right)	Horizontal Leg		2.7500	7.7500	21.3125	6.9323	3.2784	29.5565	36.4888
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	0.2784	0.2325	0.2950
<b>Total</b>			<b>23.69</b>		<b>105.93</b>	<b>132.97</b>		<b>44.96</b>	<b>177.93</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	4.4716	in	S <sub>right</sub> =	30.01	in <sup>3</sup>	x-bar =	4.4716	in	S <sub>right</sub> =	30.01	in <sup>3</sup>
I <sub>y</sub> =	177.93	in <sup>4</sup>	S <sub>left</sub> =	27.93	in <sup>3</sup>	I <sub>y</sub> =	177.93	in <sup>4</sup>	S <sub>left</sub> =	27.93	in <sup>3</sup>
C <sub>right</sub> =	5.9284	in	A =	23.6900	in <sup>2</sup>	C <sub>right</sub> =	5.9284	in	A =	23.6900	in <sup>2</sup>
C <sub>left</sub> =	6.3716	in	r <sub>y</sub> =	2.7406	in	C <sub>left</sub> =	6.3716	in	r <sub>y</sub> =	2.7406	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	198.69 k-ft	198.69 k-ft
V	184.79 k	184.79 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x101	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	7.0000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	7.4375 in
$B_3 = t =$	0.5000 in	$\text{Gap} =$	0.4375 in

\*select from dropdown list

Coped Stringer S2-12 @ FB D1

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	7.0375	69.2490	0.5248	2.6217	67.6341	68.1589
	Web	3.1000	3.5375	10.9663	9.9303	0.8783	2.3913	12.3216
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	4.1658	60.7382	60.8111
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	1.4158	12.0267	30.0267
3	Additional Plate	0.0000	0.4375	0.0000	0.0000	3.9783	0.0000	0.0000
<b>Total</b>		<b>22.44</b>		<b>99.09</b>	<b>28.53</b>		<b>142.79</b>	<b>171.32</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	4.4158 in	S <sub>top</sub> =	56.70 in <sup>3</sup>	y-bar =	4.4158 in	S <sub>top</sub> =	56.70 in <sup>3</sup>
I <sub>x</sub> =	171.32 in <sup>4</sup>	S <sub>bottom</sub> =	38.80 in <sup>3</sup>	I <sub>x</sub> =	171.32 in <sup>4</sup>	S <sub>bottom</sub> =	38.80 in <sup>3</sup>
C <sub>top</sub> =	3.0217 in	A =	22.4400 in <sup>2</sup>	C <sub>top</sub> =	3.0217 in	A =	22.4400 in <sup>2</sup>
C <sub>bottom</sub> =	4.4158 in	r <sub>x</sub> =	2.7631 in	C <sub>bottom</sub> =	4.4158 in	r <sub>x</sub> =	2.7631 in
J =	3.1492 in <sup>4</sup>	Z =	55.42 in <sup>3</sup>	Z =	55.42 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	4.2500	41.8200	124.0578	1.9000	35.5224	159.5802
	Web		3.1000	4.2500	13.1750	0.0646	1.9000	11.1910	11.2556
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.4000	33.8800	35.6665
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.4000	17.2800	17.3425
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.6000	0.6300	2.4165
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.4000	5.8800	5.9425
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	1.9000	0.0000	0.0000
<b>Total</b>			<b>22.44</b>		<b>95.37</b>	<b>127.82</b>		<b>104.38</b>	<b>232.20</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.1500 in	S <sub>right</sub> =	37.76 in <sup>3</sup>	x-bar =	6.1500 in	S <sub>right</sub> =	37.76 in <sup>3</sup>
I <sub>y</sub> =	232.20 in <sup>4</sup>	S <sub>left</sub> =	37.76 in <sup>3</sup>	I <sub>y</sub> =	232.20 in <sup>4</sup>	S <sub>left</sub> =	37.76 in <sup>3</sup>
C <sub>right</sub> =	6.1500 in	A =	22.4400 in <sup>2</sup>	C <sub>right</sub> =	6.1500 in	A =	22.4400 in <sup>2</sup>
C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.2168 in	C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.2168 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	166.26 k-ft	166.26 k-ft
V	179.57 k	179.57 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section*	W21x101	Bottom Angles:	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	5.0000 in
$C_1 = d =$	7.0000 in	$C_2 = t =$	0.7500 in
$D_1 = t_w =$	0.5000 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	7.6250 in
$B_3 = t =$	0.5000 in	Gap =	0.6250 in

\*select from dropdown list

Coped Stringer S2-12 @ FB D2

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	7.2250	71.0940	0.5248	3.2684	105.1129	105.6377
	Web	3.1000	3.7250	11.5475	9.9303	0.2316	0.1663	10.0967
2	Horizontal Legs	6.3750	0.3750	2.3906	0.2988	3.5816	81.7792	82.0780
	Vertical Legs	9.0000	3.0000	27.0000	27.0000	0.9566	8.2364	35.2364
3	Additional Plate	0.0000	0.6250	0.0000	0.0000	3.3316	0.0000	0.0000
<b>Total</b>		<b>28.32</b>		<b>112.03</b>	<b>37.75</b>		<b>195.29</b>	<b>233.05</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	3.9566 in	S <sub>top</sub> =	63.53 in <sup>3</sup>	y-bar =	3.9566 in	S <sub>top</sub> =	63.53 in <sup>3</sup>
I <sub>x</sub> =	233.05 in <sup>4</sup>	S <sub>bott.</sub> =	58.90 in <sup>3</sup>	I <sub>x</sub> =	233.05 in <sup>4</sup>	S <sub>bott.</sub> =	58.90 in <sup>3</sup>
C <sub>top</sub> =	3.6684 in	A =	28.3150 in <sup>2</sup>	C <sub>top</sub> =	3.6684 in	A =	28.3150 in <sup>2</sup>
C <sub>bottom</sub> =	3.9566 in	r <sub>x</sub> =	2.8689 in	C <sub>bottom</sub> =	3.9566 in	r <sub>x</sub> =	2.8689 in
J =	5.2403 in <sup>4</sup>	Z =	74.68 in <sup>3</sup>	Z =	74.68 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	5.2500	51.6600	124.0578	0.9000	7.9704	132.0282
	Web		3.1000	5.2500	16.2750	0.0646	0.9000	2.5110	2.5756
2 (Left)	Horizontal Leg		3.1875	2.1250	6.7734	4.7979	4.0250	51.6395	56.4373
	Vertical Leg		4.5000	4.6250	20.8125	0.2109	1.5250	10.4653	10.6763
2 (Right)	Horizontal Leg		3.1875	8.3750	26.6953	4.7979	2.2250	15.7801	20.5780
	Vertical Leg		4.5000	5.8750	26.4375	0.2109	0.2750	0.3403	0.5513
3	Additional Plate		0.0000	5.2500	0.0000	0.0000	0.9000	0.0000	0.0000
<b>Total</b>			<b>28.32</b>		<b>148.65</b>	<b>134.14</b>		<b>88.71</b>	<b>222.85</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.1500 in	S <sub>right</sub> =	36.24 in <sup>3</sup>	x-bar =	6.1500 in	S <sub>right</sub> =	36.24 in <sup>3</sup>
I <sub>y</sub> =	222.85 in <sup>4</sup>	S <sub>left</sub> =	36.24 in <sup>3</sup>	I <sub>y</sub> =	222.85 in <sup>4</sup>	S <sub>left</sub> =	36.24 in <sup>3</sup>
C <sub>right</sub> =	6.1500 in	A =	28.3150 in <sup>2</sup>	C <sub>right</sub> =	6.1500 in	A =	28.3150 in <sup>2</sup>
C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	2.8054 in	C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	2.8054 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	224.04 k-ft	224.04 k-ft
V	229.16 k	229.16 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





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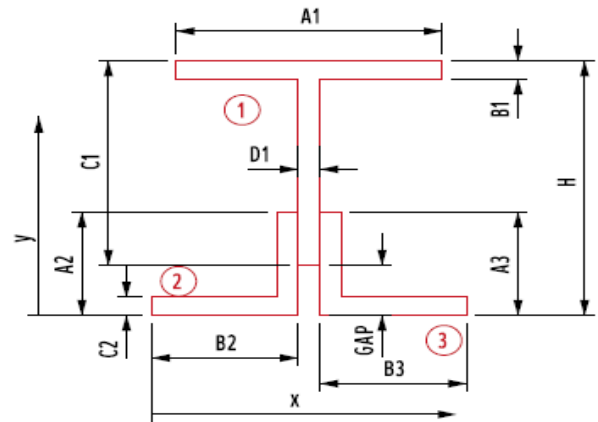
Date 3/14/2012  
 Date 3/27/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W21x101	Left Angle:	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	8.0000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in	Right Angle:	
		$A_3 = L_v =$	6.0000 in
		$B_3 = L_h =$	6.0000 in
		$C_3 = t =$	0.5000 in
		Miscellaneous:	
		H =	8.5000 in
		Gap =	0.5000 in



**Coped Stringer S2-12 @ FB D3**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	8.1000	79.7040	0.5248	3.3553	110.7767	111.3015
	Web	3.6000	4.1000	14.7600	15.5520	0.6447	1.4965	17.0485
2	Horizontal Legs	1.7500	0.2500	0.4375	0.0365	4.4947	35.3547	35.3911
	Vertical Legs	3.0000	3.0000	9.0000	9.0000	1.7447	9.1323	18.1323
3	Horizontal Legs	2.7500	0.2500	0.6875	0.0573	4.4947	55.5573	55.6146
	Vertical Legs	3.0000	3.0000	9.0000	9.0000	1.7447	9.1323	18.1323
<b>Total</b>		<b>23.94</b>		<b>113.59</b>	<b>34.17</b>		<b>221.45</b>	<b>255.62</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	4.7447 in	$S_{top} =$	68.07 in <sup>3</sup>	y-bar =	4.7447 in	$S_{top} =$	68.07 in <sup>3</sup>
$I_x =$	255.62 in <sup>4</sup>	$S_{bott.} =$	53.87 in <sup>3</sup>	$I_x =$	255.62 in <sup>4</sup>	$S_{bott.} =$	53.87 in <sup>3</sup>
$C_{top} =$	3.7553 in	A =	23.9400 in <sup>2</sup>	$C_{top} =$	3.7553 in	A =	23.9400 in <sup>2</sup>
$C_{bottom} =$	4.7447 in	$r_x =$	3.2677 in	$C_{bottom} =$	4.7447 in	$r_x =$	3.2677 in
J =	3.2742 in <sup>4</sup>	Z =	71.73 in <sup>3</sup>			Z =	71.73 in <sup>3</sup>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	4.2500	41.8200	124.0578	0.2193	0.4732	124.5310
	Web		3.6000	4.2500	15.3000	0.0750	0.2193	0.1731	0.2481
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.7193	12.9405	14.7270
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.7193	1.5522	1.6147
3 (Right)	Horizontal Leg		2.7500	7.7500	21.3125	6.9323	3.2807	29.5983	36.5306
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	0.2807	0.2364	0.2989
<b>Total</b>			<b>23.94</b>		<b>107.00</b>	<b>132.98</b>		<b>44.97</b>	<b>177.95</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	4.4693	in	S <sub>right</sub> =	30.00	in <sup>3</sup>	x-bar =	4.4693	in	S <sub>right</sub> =	30.00	in <sup>3</sup>
I <sub>y</sub> =	177.95	in <sup>4</sup>	S <sub>left</sub> =	27.94	in <sup>3</sup>	I <sub>y</sub> =	177.95	in <sup>4</sup>	S <sub>left</sub> =	27.94	in <sup>3</sup>
C <sub>right</sub> =	5.9307	in	A =	23.9400	in <sup>2</sup>	C <sub>right</sub> =	5.9307	in	A =	23.9400	in <sup>2</sup>
C <sub>left</sub> =	6.3693	in	r <sub>y</sub> =	2.7264	in	C <sub>left</sub> =	6.3693	in	r <sub>y</sub> =	2.7264	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	215.19 k-ft	215.19 k-ft
V	190.01 k	190.01 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



Made By CTG  
Checked By DMP

Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x101	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	9.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	9.8750 in
$B_3 = t =$	0.5000 in	$Gap =$	0.3750 in

\*select from dropdown list

Coped Stringer S3-12 @ FB D1

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	9.4750	93.2340	0.5248	3.8751	147.7578	148.2826
	Web	4.3500	4.7250	20.5538	27.4376	0.8749	3.3301	30.7677
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.3499	100.1768	100.2497
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	2.5999	40.5584	58.5584
3	Additional Plate	0.0000	0.3750	0.0000	0.0000	5.2249	0.0000	0.0000
<b>Total</b>		<b>23.69</b>		<b>132.66</b>	<b>46.04</b>		<b>291.82</b>	<b>337.86</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	5.5999 in	S <sub>top</sub> =	79.03 in <sup>3</sup>	y-bar =	5.5999 in	S <sub>top</sub> =	79.03 in <sup>3</sup>
I <sub>x</sub> =	337.86 in <sup>4</sup>	S <sub>bottom</sub> =	60.33 in <sup>3</sup>	I <sub>x</sub> =	337.86 in <sup>4</sup>	S <sub>bottom</sub> =	60.33 in <sup>3</sup>
C <sub>top</sub> =	4.2751 in	A =	23.6900 in <sup>2</sup>	C <sub>top</sub> =	4.2751 in	A =	23.6900 in <sup>2</sup>
C <sub>bottom</sub> =	5.5999 in	r <sub>x</sub> =	3.7765 in	C <sub>bottom</sub> =	5.5999 in	r <sub>x</sub> =	3.7765 in
J =	3.2534 in <sup>4</sup>	Z =	82.45 in <sup>3</sup>			Z =	82.45 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	4.2500	41.8200	124.0578	1.9000	35.5224	159.5802
	Web	4.3500	4.2500	18.4875	0.0906	1.9000	15.7035	15.7941
2 (Left)	Horizontal Leg	1.7500	1.7500	3.0625	1.7865	4.4000	33.8800	35.6665
	Vertical Leg	3.0000	3.7500	11.2500	0.0625	2.4000	17.2800	17.3425
2 (Right)	Horizontal Leg	1.7500	6.7500	11.8125	1.7865	0.6000	0.6300	2.4165
	Vertical Leg	3.0000	4.7500	14.2500	0.0625	1.4000	5.8800	5.9425
3	Additional Plate	0.0000	4.2500	0.0000	0.0000	1.9000	0.0000	0.0000
<b>Total</b>		<b>23.69</b>		<b>100.68</b>	<b>127.85</b>		<b>108.90</b>	<b>236.74</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.1500 in	S <sub>right</sub> =	38.49 in <sup>3</sup>	x-bar =	6.1500 in	S <sub>right</sub> =	38.49 in <sup>3</sup>
I <sub>y</sub> =	236.74 in <sup>4</sup>	S <sub>left</sub> =	38.49 in <sup>3</sup>	I <sub>y</sub> =	236.74 in <sup>4</sup>	S <sub>left</sub> =	38.49 in <sup>3</sup>
C <sub>right</sub> =	6.1500 in	A =	23.6900 in <sup>2</sup>	C <sub>right</sub> =	6.1500 in	A =	23.6900 in <sup>2</sup>
C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.1612 in	C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.1612 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	247.35 k-ft	247.35 k-ft
V	205.67 k	205.67 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x101	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	6.0000 in
$C_1 = d =$	9.5000 in	$C_2 = t =$	0.6250 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	9.8750 in
$B_3 = t =$	0.5000 in	$GAP =$	0.3750 in

\*select from dropdown list

Coped Stringer S3-12 @ FB D2

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	9.4750	93.2340	0.5248	4.6037	208.5501	209.0749
	Web	4.3500	4.7250	20.5538	27.4376	0.1463	0.0931	27.5307
2	Horizontal Legs	6.7188	0.3125	2.0996	0.2187	4.5588	139.6331	139.8518
	Vertical Legs	7.5000	3.0000	22.5000	22.5000	1.8713	26.2630	48.7630
3	Additional Plate	0.0000	0.3750	0.0000	0.0000	4.4963	0.0000	0.0000
<b>Total</b>		<b>28.41</b>		<b>138.39</b>	<b>50.68</b>		<b>374.54</b>	<b>425.22</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties					As-Inspected Section Properties						
y-bar =	4.8713	in	S <sub>top</sub> =	84.98	in <sup>3</sup>	y-bar =	4.8713	in	S <sub>top</sub> =	84.98	in <sup>3</sup>
I <sub>x</sub> =	425.22	in <sup>4</sup>	S <sub>bottom</sub> =	87.29	in <sup>3</sup>	I <sub>x</sub> =	425.22	in <sup>4</sup>	S <sub>bottom</sub> =	87.29	in <sup>3</sup>
C <sub>top</sub> =	5.0037	in	A =	28.4088	in <sup>2</sup>	C <sub>top</sub> =	5.0037	in	A =	28.4088	in <sup>2</sup>
C <sub>bottom</sub> =	4.8713	in	r <sub>x</sub> =	3.8688	in	C <sub>bottom</sub> =	4.8713	in	r <sub>x</sub> =	3.8688	in
J =	4.3131	in <sup>4</sup>	Z =	100.61	in <sup>3</sup>	Z =	100.61	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	6.2500	61.5000	124.0578	0.0000	0.0000	124.0578
	Web		4.3500	6.2500	27.1875	0.0906	0.0000	0.0000	0.0906
2 (Left)	Horizontal Leg		3.3594	2.6875	9.0283	8.0879	3.5625	42.6352	50.7231
	Vertical Leg		3.7500	5.6875	21.3281	0.1221	0.5625	1.1865	1.3086
2 (Right)	Horizontal Leg		3.3594	9.8125	32.9639	8.0879	3.5625	42.6352	50.7231
	Vertical Leg		3.7500	6.8125	25.5469	0.1221	0.5625	1.1865	1.3086
3	Additional Plate		0.0000	6.2500	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>28.41</b>		<b>177.55</b>	<b>140.57</b>		<b>87.64</b>	<b>228.21</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	6.2500	in	S <sub>right</sub> =	36.51	in <sup>3</sup>	x-bar =	6.2500	in	S <sub>right</sub> =	36.51	in <sup>3</sup>
I <sub>y</sub> =	228.21	in <sup>4</sup>	S <sub>left</sub> =	36.51	in <sup>3</sup>	I <sub>y</sub> =	228.21	in <sup>4</sup>	S <sub>left</sub> =	36.51	in <sup>3</sup>
C <sub>right</sub> =	6.2500	in	A =	28.4088	in <sup>2</sup>	C <sub>right</sub> =	6.2500	in	A =	28.4088	in <sup>2</sup>
C <sub>left</sub> =	6.2500	in	r <sub>y</sub> =	2.8343	in	C <sub>left</sub> =	6.2500	in	r <sub>y</sub> =	2.8343	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	301.83 k-ft	301.83 k-ft
V	231.12 k	231.12 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x101	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	10.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	10.8750 in
$B_3 = t =$	0.5000 in	$GAP =$	0.3750 in

\*select from dropdown list

Coped Stringer S3-12 @ FB D3

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	10.4750	103.0740	0.5248	4.3861	189.3015	189.8263
	Web	4.8500	5.2250	25.3413	38.0280	0.8639	3.6196	41.6476
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.8389	119.3242	119.3971
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.0889	57.2474	75.2474
3	Additional Plate	0.0000	0.3750	0.0000	0.0000	5.7139	0.0000	0.0000
<b>Total</b>		<b>24.19</b>		<b>147.29</b>	<b>56.63</b>		<b>369.49</b>	<b>426.12</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.0889 in	S <sub>top</sub> =	89.03 in <sup>3</sup>	y-bar =	6.0889 in	S <sub>top</sub> =	89.03 in <sup>3</sup>
I <sub>x</sub> =	426.12 in <sup>4</sup>	S <sub>bott.</sub> =	69.98 in <sup>3</sup>	I <sub>x</sub> =	426.12 in <sup>4</sup>	S <sub>bott.</sub> =	69.98 in <sup>3</sup>
C <sub>top</sub> =	4.7861 in	A =	24.1900 in <sup>2</sup>	C <sub>top</sub> =	4.7861 in	A =	24.1900 in <sup>2</sup>
C <sub>bottom</sub> =	6.0889 in	r <sub>x</sub> =	4.1971 in	C <sub>bottom</sub> =	6.0889 in	r <sub>x</sub> =	4.1971 in
J =	3.2950 in <sup>4</sup>	Z =	94.19 in <sup>3</sup>	Z =	94.19 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	4.2500	41.8200	124.0578	1.9000	35.5224	159.5802
	Web	4.8500	4.2500	20.6125	0.1010	1.9000	17.5085	17.6095
2 (Left)	Horizontal Leg	1.7500	1.7500	3.0625	1.7865	4.4000	33.8800	35.6665
	Vertical Leg	3.0000	3.7500	11.2500	0.0625	2.4000	17.2800	17.3425
2 (Right)	Horizontal Leg	1.7500	6.7500	11.8125	1.7865	0.6000	0.6300	2.4165
	Vertical Leg	3.0000	4.7500	14.2500	0.0625	1.4000	5.8800	5.9425
3	Additional Plate	0.0000	4.2500	0.0000	0.0000	1.9000	0.0000	0.0000
<b>Total</b>		<b>24.19</b>		<b>102.81</b>	<b>127.86</b>		<b>110.70</b>	<b>238.56</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.1500 in	S <sub>right</sub> =	38.79 in <sup>3</sup>	x-bar =	6.1500 in	S <sub>right</sub> =	38.79 in <sup>3</sup>
I <sub>y</sub> =	238.56 in <sup>4</sup>	S <sub>left</sub> =	38.79 in <sup>3</sup>	I <sub>y</sub> =	238.56 in <sup>4</sup>	S <sub>left</sub> =	38.79 in <sup>3</sup>
C <sub>right</sub> =	6.1500 in	A =	24.1900 in <sup>2</sup>	C <sub>right</sub> =	6.1500 in	A =	24.1900 in <sup>2</sup>
C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.1404 in	C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.1404 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	282.57 k-ft	282.57 k-ft
V	216.11 k	216.11 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x101	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	10.0000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	10.5000 in
$B_3 = t =$	0.5000 in	$Gap =$	0.5000 in

\*select from dropdown list

Coped Stringer S4-12 @ FB D1

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	10.1000	99.3840	0.5248	4.1802	171.9483	172.4731
	Web	4.6000	5.1000	23.4600	32.4453	0.8198	3.0912	35.5365
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.6698	112.5115	112.5845
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	2.9198	51.1499	69.1499
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.4198	0.0000	0.0000
<b>Total</b>		<b>23.94</b>		<b>141.72</b>	<b>51.04</b>		<b>338.70</b>	<b>389.74</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	5.9198 in	S <sub>top</sub> =	85.09 in <sup>3</sup>	y-bar =	5.9198 in	S <sub>top</sub> =	85.09 in <sup>3</sup>
I <sub>x</sub> =	389.74 in <sup>4</sup>	S <sub>bottom</sub> =	65.84 in <sup>3</sup>	I <sub>x</sub> =	389.74 in <sup>4</sup>	S <sub>bottom</sub> =	65.84 in <sup>3</sup>
C <sub>top</sub> =	4.5802 in	A =	23.9400 in <sup>2</sup>	C <sub>top</sub> =	4.5802 in	A =	23.9400 in <sup>2</sup>
C <sub>bottom</sub> =	5.9198 in	r <sub>x</sub> =	4.0349 in	C <sub>bottom</sub> =	5.9198 in	r <sub>x</sub> =	4.0349 in
J =	3.2742 in <sup>4</sup>	Z =	89.40 in <sup>3</sup>	Z =	89.40 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	4.2500	41.8200	124.0578	1.9000	35.5224	159.5802
	Web	4.6000	4.2500	19.5500	0.0958	1.9000	16.6060	16.7018
2 (Left)	Horizontal Leg	1.7500	1.7500	3.0625	1.7865	4.4000	33.8800	35.6665
	Vertical Leg	3.0000	3.7500	11.2500	0.0625	2.4000	17.2800	17.3425
2 (Right)	Horizontal Leg	1.7500	6.7500	11.8125	1.7865	0.6000	0.6300	2.4165
	Vertical Leg	3.0000	4.7500	14.2500	0.0625	1.4000	5.8800	5.9425
3	Additional Plate	0.0000	4.2500	0.0000	0.0000	1.9000	0.0000	0.0000
<b>Total</b>		<b>23.94</b>		<b>101.75</b>	<b>127.85</b>		<b>109.80</b>	<b>237.65</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.1500 in	S <sub>right</sub> =	38.64 in <sup>3</sup>	x-bar =	6.1500 in	S <sub>right</sub> =	38.64 in <sup>3</sup>
I <sub>y</sub> =	237.65 in <sup>4</sup>	S <sub>left</sub> =	38.64 in <sup>3</sup>	I <sub>y</sub> =	237.65 in <sup>4</sup>	S <sub>left</sub> =	38.64 in <sup>3</sup>
C <sub>right</sub> =	6.1500 in	A =	23.9400 in <sup>2</sup>	C <sub>right</sub> =	6.1500 in	A =	23.9400 in <sup>2</sup>
C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.1507 in	C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.1507 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	268.20 k-ft	268.20 k-ft
V	210.89 k	210.89 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section*	W21x101	Bottom Angles:
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$ 6.0000 in
$C_1 = d =$	9.5000 in	$C_2 = t =$ 0.6250 in
$D_1 = t_w =$	0.5000 in	



Additional Plate:	Miscellaneous:
$A_3 = d =$ 0.0000 in	H = 9.8750 in
$B_3 = t =$ 0.5000 in	Gap = 0.3750 in

\*select from dropdown list

Coped Stringer S4-12 @ FB D2

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	9.4750	93.2340	0.5248	4.6037	208.5501	209.0749
	Web	4.3500	4.7250	20.5538	27.4376	0.1463	0.0931	27.5307
2	Horizontal Legs	6.7188	0.3125	2.0996	0.2187	4.5588	139.6331	139.8518
	Vertical Legs	7.5000	3.0000	22.5000	22.5000	1.8713	26.2630	48.7630
3	Additional Plate	0.0000	0.3750	0.0000	0.0000	4.4963	0.0000	0.0000
<b>Total</b>		<b>28.41</b>		<b>138.39</b>	<b>50.68</b>		<b>374.54</b>	<b>425.22</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	4.8713	in	S <sub>top</sub> =	84.98	in <sup>3</sup>	y-bar =	4.8713	in	S <sub>top</sub> =	84.98	in <sup>3</sup>
I <sub>x</sub> =	425.22	in <sup>4</sup>	S <sub>bottom</sub> =	87.29	in <sup>3</sup>	I <sub>x</sub> =	425.22	in <sup>4</sup>	S <sub>bottom</sub> =	87.29	in <sup>3</sup>
C <sub>top</sub> =	5.0037	in	A =	28.4088	in <sup>2</sup>	C <sub>top</sub> =	5.0037	in	A =	28.4088	in <sup>2</sup>
C <sub>bottom</sub> =	4.8713	in	r <sub>x</sub> =	3.8688	in	C <sub>bottom</sub> =	4.8713	in	r <sub>x</sub> =	3.8688	in
J =	4.3131	in <sup>4</sup>	Z =	100.61	in <sup>3</sup>	Z =	100.61	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	6.2500	61.5000	124.0578	0.0000	0.0000	124.0578
	Web		4.3500	6.2500	27.1875	0.0906	0.0000	0.0000	0.0906
2 (Left)	Horizontal Leg		3.3594	2.6875	9.0283	8.0879	3.5625	42.6352	50.7231
	Vertical Leg		3.7500	5.6875	21.3281	0.1221	0.5625	1.1865	1.3086
2 (Right)	Horizontal Leg		3.3594	9.8125	32.9639	8.0879	3.5625	42.6352	50.7231
	Vertical Leg		3.7500	6.8125	25.5469	0.1221	0.5625	1.1865	1.3086
3	Additional Plate		0.0000	6.2500	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>28.41</b>		<b>177.55</b>	<b>140.57</b>		<b>87.64</b>	<b>228.21</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	6.2500	in	S <sub>right</sub> =	36.51	in <sup>3</sup>	x-bar =	6.2500	in	S <sub>right</sub> =	36.51	in <sup>3</sup>
I <sub>y</sub> =	228.21	in <sup>4</sup>	S <sub>left</sub> =	36.51	in <sup>3</sup>	I <sub>y</sub> =	228.21	in <sup>4</sup>	S <sub>left</sub> =	36.51	in <sup>3</sup>
C <sub>right</sub> =	6.2500	in	A =	28.4088	in <sup>2</sup>	C <sub>right</sub> =	6.2500	in	A =	28.4088	in <sup>2</sup>
C <sub>left</sub> =	6.2500	in	r <sub>y</sub> =	2.8343	in	C <sub>left</sub> =	6.2500	in	r <sub>y</sub> =	2.8343	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	301.83 k-ft	301.83 k-ft
V	231.12 k	231.12 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



Made By CTG  
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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x101	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	11.0000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	11.3750 in
$B_3 = t =$	0.5000 in	$Gap =$	0.3750 in

\*select from dropdown list

Coped Stringer S4-12 @ FB D3

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	10.9750	107.9940	0.5248	4.6415	211.9854	212.5102
	Web	5.1000	5.4750	27.9225	44.2170	0.8585	3.7591	47.9761
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.0835	129.5327	129.6056
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.3335	66.6746	84.6746
3	Additional Plate	0.0000	0.3750	0.0000	0.0000	5.9585	0.0000	0.0000
<b>Total</b>		<b>24.44</b>		<b>154.79</b>	<b>62.81</b>		<b>411.95</b>	<b>474.77</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.3335 in	S <sub>top</sub> =	94.17 in <sup>3</sup>	y-bar =	6.3335 in	S <sub>top</sub> =	94.17 in <sup>3</sup>
I <sub>x</sub> =	474.77 in <sup>4</sup>	S <sub>bottom</sub> =	74.96 in <sup>3</sup>	I <sub>x</sub> =	474.77 in <sup>4</sup>	S <sub>bottom</sub> =	74.96 in <sup>3</sup>
C <sub>top</sub> =	5.0415 in	A =	24.4400 in <sup>2</sup>	C <sub>top</sub> =	5.0415 in	A =	24.4400 in <sup>2</sup>
C <sub>bottom</sub> =	6.3335 in	r <sub>x</sub> =	4.4075 in	C <sub>bottom</sub> =	6.3335 in	r <sub>x</sub> =	4.4075 in
J =	3.3159 in <sup>4</sup>	Z =	100.22 in <sup>3</sup>			Z =	100.22 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	4.2500	41.8200	124.0578	1.9000	35.5224	159.5802
	Web	5.1000	4.2500	21.6750	0.1063	1.9000	18.4110	18.5173
2 (Left)	Horizontal Leg	1.7500	1.7500	3.0625	1.7865	4.4000	33.8800	35.6665
	Vertical Leg	3.0000	3.7500	11.2500	0.0625	2.4000	17.2800	17.3425
2 (Right)	Horizontal Leg	1.7500	6.7500	11.8125	1.7865	0.6000	0.6300	2.4165
	Vertical Leg	3.0000	4.7500	14.2500	0.0625	1.4000	5.8800	5.9425
3	Additional Plate	0.0000	4.2500	0.0000	0.0000	1.9000	0.0000	0.0000
<b>Total</b>		<b>24.44</b>		<b>103.87</b>	<b>127.86</b>		<b>111.60</b>	<b>239.47</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.1500 in	S <sub>right</sub> =	38.94 in <sup>3</sup>	x-bar =	6.1500 in	S <sub>right</sub> =	38.94 in <sup>3</sup>
I <sub>y</sub> =	239.47 in <sup>4</sup>	S <sub>left</sub> =	38.94 in <sup>3</sup>	I <sub>y</sub> =	239.47 in <sup>4</sup>	S <sub>left</sub> =	38.94 in <sup>3</sup>
C <sub>right</sub> =	6.1500 in	A =	24.4400 in <sup>2</sup>	C <sub>right</sub> =	6.1500 in	A =	24.4400 in <sup>2</sup>
C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.1302 in	C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.1302 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	300.66 k-ft	300.66 k-ft
V	221.33 k	221.33 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x101	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	10.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	11.0000 in
$B_3 = t =$	0.5000 in	$Gap =$	0.5000 in

\*select from dropdown list

Coped Stringer S5-12 @ FB D1

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	10.6000	104.3040	0.5248	4.4352	193.5627	194.0875
	Web	4.8500	5.3500	25.9475	38.0280	0.8148	3.2199	41.2479
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.9148	122.4470	122.5199
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.1648	60.0957	78.0957
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.6648	0.0000	0.0000
<b>Total</b>		<b>24.19</b>		<b>149.13</b>	<b>56.63</b>		<b>379.33</b>	<b>435.95</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.1648 in	S <sub>top</sub> =	90.16 in <sup>3</sup>	y-bar =	6.1648 in	S <sub>top</sub> =	90.16 in <sup>3</sup>
I <sub>x</sub> =	435.95 in <sup>4</sup>	S <sub>bott.</sub> =	70.72 in <sup>3</sup>	I <sub>x</sub> =	435.95 in <sup>4</sup>	S <sub>bott.</sub> =	70.72 in <sup>3</sup>
C <sub>top</sub> =	4.8352 in	A =	24.1900 in <sup>2</sup>	C <sub>top</sub> =	4.8352 in	A =	24.1900 in <sup>2</sup>
C <sub>bottom</sub> =	6.1648 in	r <sub>x</sub> =	4.2452 in	C <sub>bottom</sub> =	6.1648 in	r <sub>x</sub> =	4.2452 in
J =	3.2950 in <sup>4</sup>	Z =	95.35 in <sup>3</sup>	Z =	95.35 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	4.2500	41.8200	124.0578	1.9000	35.5224	159.5802
	Web	4.8500	4.2500	20.6125	0.1010	1.9000	17.5085	17.6095
2 (Left)	Horizontal Leg	1.7500	1.7500	3.0625	1.7865	4.4000	33.8800	35.6665
	Vertical Leg	3.0000	3.7500	11.2500	0.0625	2.4000	17.2800	17.3425
2 (Right)	Horizontal Leg	1.7500	6.7500	11.8125	1.7865	0.6000	0.6300	2.4165
	Vertical Leg	3.0000	4.7500	14.2500	0.0625	1.4000	5.8800	5.9425
3	Additional Plate	0.0000	4.2500	0.0000	0.0000	1.9000	0.0000	0.0000
<b>Total</b>		<b>24.19</b>		<b>102.81</b>	<b>127.86</b>		<b>110.70</b>	<b>238.56</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.1500 in	S <sub>right</sub> =	38.79 in <sup>3</sup>	x-bar =	6.1500 in	S <sub>right</sub> =	38.79 in <sup>3</sup>
I <sub>y</sub> =	238.56 in <sup>4</sup>	S <sub>left</sub> =	38.79 in <sup>3</sup>	I <sub>y</sub> =	238.56 in <sup>4</sup>	S <sub>left</sub> =	38.79 in <sup>3</sup>
C <sub>right</sub> =	6.1500 in	A =	24.1900 in <sup>2</sup>	C <sub>right</sub> =	6.1500 in	A =	24.1900 in <sup>2</sup>
C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.1404 in	C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.1404 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	286.05 k-ft	286.05 k-ft
V	216.11 k	216.11 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x101	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	6.0000 in
$C_1 = d =$	10.0000 in	$C_2 = t =$	0.6250 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	10.3750 in
$B_3 = t =$	0.5000 in	$Gap =$	0.3750 in

\*select from dropdown list

Coped Stringer S5-12 @ FB D2

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	9.9750	98.1540	0.5248	4.8932	235.6012	236.1260
	Web	4.6000	4.9750	22.8850	32.4453	0.1068	0.0525	32.4978
2	Horizontal Legs	6.7188	0.3125	2.0996	0.2187	4.7693	152.8275	153.0462
	Vertical Legs	7.5000	3.0000	22.5000	22.5000	2.0818	32.5048	55.0048
3	Additional Plate	0.0000	0.3750	0.0000	0.0000	4.7068	0.0000	0.0000
<b>Total</b>		<b>28.66</b>		<b>145.64</b>	<b>55.69</b>		<b>420.99</b>	<b>476.67</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	5.0818	in	S <sub>top</sub> = 90.05 in <sup>3</sup>	y-bar =	5.0818	in	S <sub>top</sub> = 90.05 in <sup>3</sup>
I <sub>x</sub> =	476.67	in <sup>4</sup>	S <sub>bott.</sub> = 93.80 in <sup>3</sup>	I <sub>x</sub> =	476.67	in <sup>4</sup>	S <sub>bott.</sub> = 93.80 in <sup>3</sup>
C <sub>top</sub> =	5.2932	in	A = 28.6588 in <sup>2</sup>	C <sub>top</sub> =	5.2932	in	A = 28.6588 in <sup>2</sup>
C <sub>bottom</sub> =	5.0818	in	r <sub>x</sub> = 4.0783 in	C <sub>bottom</sub> =	5.0818	in	r <sub>x</sub> = 4.0783 in
J =	4.3339	in <sup>4</sup>	Z = 106.76 in <sup>3</sup>	Z =	106.76	in <sup>3</sup>	

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	6.2500	61.5000	124.0578	0.0000	0.0000	124.0578
	Web	4.6000	6.2500	28.7500	0.0958	0.0000	0.0000	0.0958
2 (Left)	Horizontal Leg	3.3594	2.6875	9.0283	8.0879	3.5625	42.6352	50.7231
	Vertical Leg	3.7500	5.6875	21.3281	0.1221	0.5625	1.1865	1.3086
2 (Right)	Horizontal Leg	3.3594	9.8125	32.9639	8.0879	3.5625	42.6352	50.7231
	Vertical Leg	3.7500	6.8125	25.5469	0.1221	0.5625	1.1865	1.3086
3	Additional Plate	0.0000	6.2500	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>28.66</b>		<b>179.12</b>	<b>140.57</b>		<b>87.64</b>	<b>228.22</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.2500	in	S <sub>right</sub> = 36.51 in <sup>3</sup>	x-bar =	6.2500	in	S <sub>right</sub> = 36.51 in <sup>3</sup>
I <sub>y</sub> =	228.22	in <sup>4</sup>	S <sub>left</sub> = 36.51 in <sup>3</sup>	I <sub>y</sub> =	228.22	in <sup>4</sup>	S <sub>left</sub> = 36.51 in <sup>3</sup>
C <sub>right</sub> =	6.2500	in	A = 28.6588 in <sup>2</sup>	C <sub>right</sub> =	6.2500	in	A = 28.6588 in <sup>2</sup>
C <sub>left</sub> =	6.2500	in	r <sub>y</sub> = 2.8219 in	C <sub>left</sub> =	6.2500	in	r <sub>y</sub> = 2.8219 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	320.28 k-ft	320.28 k-ft
V	236.34 k	236.34 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



Made By CTG  
Checked By DMP

Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x101	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	11.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	11.8125 in
$B_3 = t =$	0.5000 in	$GAP =$	0.3125 in

\*select from dropdown list

Coped Stringer S5-12 @ FB D3

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	11.4125	112.2990	0.5248	4.8727	233.6304	234.1552
	Web	5.3500	5.6625	30.2944	51.0435	0.8773	4.1179	55.1614
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.2898	138.4668	138.5397
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.5398	75.1823	93.1823
3	Additional Plate	0.0000	0.3125	0.0000	0.0000	6.2273	0.0000	0.0000
<b>Total</b>		<b>24.69</b>		<b>161.47</b>	<b>69.64</b>		<b>451.40</b>	<b>521.04</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.5398 in	S <sub>top</sub> =	98.82 in <sup>3</sup>	y-bar =	6.5398 in	S <sub>top</sub> =	98.82 in <sup>3</sup>
I <sub>x</sub> =	521.04 in <sup>4</sup>	S <sub>bottom</sub> =	79.67 in <sup>3</sup>	I <sub>x</sub> =	521.04 in <sup>4</sup>	S <sub>bottom</sub> =	79.67 in <sup>3</sup>
C <sub>top</sub> =	5.2727 in	A =	24.6900 in <sup>2</sup>	C <sub>top</sub> =	5.2727 in	A =	24.6900 in <sup>2</sup>
C <sub>bottom</sub> =	6.5398 in	r <sub>x</sub> =	4.5938 in	C <sub>bottom</sub> =	6.5398 in	r <sub>x</sub> =	4.5938 in
J =	3.3367 in <sup>4</sup>	Z =	105.75 in <sup>3</sup>	Z =	105.75 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	4.2500	41.8200	124.0578	1.9000	35.5224	159.5802
	Web		5.3500	4.2500	22.7375	0.1115	1.9000	19.3135	19.4250
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.4000	33.8800	35.6665
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.4000	17.2800	17.3425
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.6000	0.6300	2.4165
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.4000	5.8800	5.9425
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	1.9000	0.0000	0.0000
<b>Total</b>			<b>24.69</b>		<b>104.93</b>	<b>127.87</b>		<b>112.51</b>	<b>240.37</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.1500 in	S <sub>right</sub> =	39.09 in <sup>3</sup>	x-bar =	6.1500 in	S <sub>right</sub> =	39.09 in <sup>3</sup>
I <sub>y</sub> =	240.37 in <sup>4</sup>	S <sub>left</sub> =	39.09 in <sup>3</sup>	I <sub>y</sub> =	240.37 in <sup>4</sup>	S <sub>left</sub> =	39.09 in <sup>3</sup>
C <sub>right</sub> =	6.1500 in	A =	24.6900 in <sup>2</sup>	C <sub>right</sub> =	6.1500 in	A =	24.6900 in <sup>2</sup>
C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.1202 in	C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.1202 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	317.25 k-ft	317.25 k-ft
V	226.55 k	226.55 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x101	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	11.0000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	11.5000 in
$B_3 = t =$	0.5000 in	$Gap =$	0.5000 in

\*select from dropdown list

Coped Stringer S6-12 @ FB D1

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	11.1000	109.2240	0.5248	4.6901	216.4469	216.9717
	Web	5.1000	5.6000	28.5600	44.2170	0.8099	3.3456	47.5626
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.1599	132.8071	132.8800
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.4099	69.7663	87.7663
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.9099	0.0000	0.0000
<b>Total</b>		<b>24.44</b>		<b>156.66</b>	<b>62.81</b>		<b>422.37</b>	<b>485.18</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.4099 in	S <sub>top</sub> =	95.32 in <sup>3</sup>	y-bar =	6.4099 in	S <sub>top</sub> =	95.32 in <sup>3</sup>
I <sub>x</sub> =	485.18 in <sup>4</sup>	S <sub>bott.</sub> =	75.69 in <sup>3</sup>	I <sub>x</sub> =	485.18 in <sup>4</sup>	S <sub>bott.</sub> =	75.69 in <sup>3</sup>
C <sub>top</sub> =	5.0901 in	A =	24.4400 in <sup>2</sup>	C <sub>top</sub> =	5.0901 in	A =	24.4400 in <sup>2</sup>
C <sub>bottom</sub> =	6.4099 in	r <sub>x</sub> =	4.4555 in	C <sub>bottom</sub> =	6.4099 in	r <sub>x</sub> =	4.4555 in
J =	3.3159 in <sup>4</sup>	Z =	101.39 in <sup>3</sup>			Z =	101.39 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	4.2500	41.8200	124.0578	1.9000	35.5224	159.5802
	Web		5.1000	4.2500	21.6750	0.1063	1.9000	18.4110	18.5173
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.4000	33.8800	35.6665
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.4000	17.2800	17.3425
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.6000	0.6300	2.4165
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.4000	5.8800	5.9425
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	1.9000	0.0000	0.0000
<b>Total</b>			<b>24.44</b>		<b>103.87</b>	<b>127.86</b>		<b>111.60</b>	<b>239.47</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.1500 in	S <sub>right</sub> =	38.94 in <sup>3</sup>	x-bar =	6.1500 in	S <sub>right</sub> =	38.94 in <sup>3</sup>
I <sub>y</sub> =	239.47 in <sup>4</sup>	S <sub>left</sub> =	38.94 in <sup>3</sup>	I <sub>y</sub> =	239.47 in <sup>4</sup>	S <sub>left</sub> =	38.94 in <sup>3</sup>
C <sub>right</sub> =	6.1500 in	A =	24.4400 in <sup>2</sup>	C <sub>right</sub> =	6.1500 in	A =	24.4400 in <sup>2</sup>
C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.1302 in	C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.1302 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	304.17 k-ft	304.17 k-ft
V	221.33 k	221.33 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x101	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	6.0000 in
$C_1 = d =$	11.0000 in	$C_2 = t =$	0.6250 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	11.5000 in
$B_3 = t =$	0.5000 in	$Gap =$	0.5000 in

\*select from dropdown list

Coped Stringer S6-12 @ FB D2

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	11.1000	109.2240	0.5248	5.5311	301.0304	301.5552
	Web	5.1000	5.6000	28.5600	44.2170	0.0311	0.0049	44.2219
2	Horizontal Legs	6.7188	0.3125	2.0996	0.2187	5.2564	185.6408	185.8595
	Vertical Legs	7.5000	3.0000	22.5000	22.5000	2.5689	49.4963	71.9963
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.0689	0.0000	0.0000
<b>Total</b>		<b>29.16</b>		<b>162.38</b>	<b>67.46</b>		<b>536.17</b>	<b>603.63</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	5.5689 in	S <sub>top</sub> =	101.78 in <sup>3</sup>	y-bar =	5.5689 in	S <sub>top</sub> =	101.78 in <sup>3</sup>
I <sub>x</sub> =	603.63 in <sup>4</sup>	S <sub>bott.</sub> =	108.39 in <sup>3</sup>	I <sub>x</sub> =	603.63 in <sup>4</sup>	S <sub>bott.</sub> =	108.39 in <sup>3</sup>
C <sub>top</sub> =	5.9311 in	A =	29.1588 in <sup>2</sup>	C <sub>top</sub> =	5.9311 in	A =	29.1588 in <sup>2</sup>
C <sub>bottom</sub> =	5.5689 in	r <sub>x</sub> =	4.5499 in	C <sub>bottom</sub> =	5.5689 in	r <sub>x</sub> =	4.5499 in
J =	4.3756 in <sup>4</sup>	Z =	120.72 in <sup>3</sup>	Z =	120.72 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	6.2500	61.5000	124.0578	0.0000	0.0000	124.0578
	Web		5.1000	6.2500	31.8750	0.1063	0.0000	0.0000	0.1063
2 (Left)	Horizontal Leg		3.3594	2.6875	9.0283	8.0879	3.5625	42.6352	50.7231
	Vertical Leg		3.7500	5.6875	21.3281	0.1221	0.5625	1.1865	1.3086
2 (Right)	Horizontal Leg		3.3594	9.8125	32.9639	8.0879	3.5625	42.6352	50.7231
	Vertical Leg		3.7500	6.8125	25.5469	0.1221	0.5625	1.1865	1.3086
3	Additional Plate		0.0000	6.2500	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>29.16</b>		<b>182.24</b>	<b>140.58</b>		<b>87.64</b>	<b>228.23</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.2500 in	S <sub>right</sub> =	36.52 in <sup>3</sup>	x-bar =	6.2500 in	S <sub>right</sub> =	36.52 in <sup>3</sup>
I <sub>y</sub> =	228.23 in <sup>4</sup>	S <sub>left</sub> =	36.52 in <sup>3</sup>	I <sub>y</sub> =	228.23 in <sup>4</sup>	S <sub>left</sub> =	36.52 in <sup>3</sup>
C <sub>right</sub> =	6.2500 in	A =	29.1588 in <sup>2</sup>	C <sub>right</sub> =	6.2500 in	A =	29.1588 in <sup>2</sup>
C <sub>left</sub> =	6.2500 in	r <sub>y</sub> =	2.7977 in	C <sub>left</sub> =	6.2500 in	r <sub>y</sub> =	2.7977 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	362.16 k-ft	362.16 k-ft
V	246.78 k	246.78 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





Made By CTG  
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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section*	W21x101	Bottom Angles:	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	11.7500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	12.2500 in
$B_3 = t =$	0.5000 in	Gap =	0.5000 in

\*select from dropdown list

Coped Stringer S6-12 @ FB D3

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	11.8500	116.6040	0.5248	5.0722	253.1517	253.6765
	Web	5.4750	5.9750	32.7131	54.7055	0.8028	3.5289	58.2344
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.5278	149.1445	149.2174
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.7778	85.6325	103.6325
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.2778	0.0000	0.0000
<b>Total</b>		<b>24.82</b>		<b>168.19</b>	<b>73.30</b>		<b>491.46</b>	<b>564.76</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.7778 in	S <sub>top</sub> =	103.21 in <sup>3</sup>	y-bar =	6.7778 in	S <sub>top</sub> =	103.21 in <sup>3</sup>
I <sub>x</sub> =	564.76 in <sup>4</sup>	S <sub>bott.</sub> =	83.32 in <sup>3</sup>	I <sub>x</sub> =	564.76 in <sup>4</sup>	S <sub>bott.</sub> =	83.32 in <sup>3</sup>
C <sub>top</sub> =	5.4722 in	A =	24.8150 in <sup>2</sup>	C <sub>top</sub> =	5.4722 in	A =	24.8150 in <sup>2</sup>
C <sub>bottom</sub> =	6.7778 in	r <sub>x</sub> =	4.7706 in	C <sub>bottom</sub> =	6.7778 in	r <sub>x</sub> =	4.7706 in
J =	3.3471 in <sup>4</sup>	Z =	110.63 in <sup>3</sup>			Z =	110.63 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	4.2500	41.8200	124.0578	1.9000	35.5224	159.5802
	Web		5.4750	4.2500	23.2688	0.1141	1.9000	19.7648	19.8788
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.4000	33.8800	35.6665
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.4000	17.2800	17.3425
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.6000	0.6300	2.4165
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.4000	5.8800	5.9425
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	1.9000	0.0000	0.0000
<b>Total</b>			<b>24.82</b>		<b>105.46</b>	<b>127.87</b>		<b>112.96</b>	<b>240.83</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.1500 in	S <sub>right</sub> =	39.16 in <sup>3</sup>	x-bar =	6.1500 in	S <sub>right</sub> =	39.16 in <sup>3</sup>
I <sub>y</sub> =	240.83 in <sup>4</sup>	S <sub>left</sub> =	39.16 in <sup>3</sup>	I <sub>y</sub> =	240.83 in <sup>4</sup>	S <sub>left</sub> =	39.16 in <sup>3</sup>
C <sub>right</sub> =	6.1500 in	A =	24.8150 in <sup>2</sup>	C <sub>right</sub> =	6.1500 in	A =	24.8150 in <sup>2</sup>
C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.1153 in	C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.1153 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	331.89 k-ft	331.89 k-ft
V	229.16 k	229.16 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x101	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	11.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	12.0000 in
$B_3 = t =$	0.5000 in	$GAP =$	0.5000 in

\*select from dropdown list

Coped Stringer S7-12 @ FB D1

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	11.6000	114.1440	0.5248	4.9448	240.5998	241.1246
	Web	5.3500	5.8500	31.2975	51.0435	0.8052	3.4685	54.5120
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.4052	143.5924	143.6653
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.6552	80.1622	98.1622
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.1552	0.0000	0.0000
<b>Total</b>		<b>24.69</b>		<b>164.32</b>	<b>69.64</b>		<b>467.82</b>	<b>537.46</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.6552 in	S <sub>top</sub> =	100.56 in <sup>3</sup>	y-bar =	6.6552 in	S <sub>top</sub> =	100.56 in <sup>3</sup>
I <sub>x</sub> =	537.46 in <sup>4</sup>	S <sub>bott.</sub> =	80.76 in <sup>3</sup>	I <sub>x</sub> =	537.46 in <sup>4</sup>	S <sub>bott.</sub> =	80.76 in <sup>3</sup>
C <sub>top</sub> =	5.3448 in	A =	24.6900 in <sup>2</sup>	C <sub>top</sub> =	5.3448 in	A =	24.6900 in <sup>2</sup>
C <sub>bottom</sub> =	6.6552 in	r <sub>x</sub> =	4.6657 in	C <sub>bottom</sub> =	6.6552 in	r <sub>x</sub> =	4.6657 in
J =	3.3367 in <sup>4</sup>	Z =	107.53 in <sup>3</sup>			Z =	107.53 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	4.2500	41.8200	124.0578	1.9000	35.5224	159.5802
	Web		5.3500	4.2500	22.7375	0.1115	1.9000	19.3135	19.4250
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.4000	33.8800	35.6665
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.4000	17.2800	17.3425
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.6000	0.6300	2.4165
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.4000	5.8800	5.9425
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	1.9000	0.0000	0.0000
<b>Total</b>			<b>24.69</b>		<b>104.93</b>	<b>127.87</b>		<b>112.51</b>	<b>240.37</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.1500 in	S <sub>right</sub> =	39.09 in <sup>3</sup>	x-bar =	6.1500 in	S <sub>right</sub> =	39.09 in <sup>3</sup>
I <sub>y</sub> =	240.37 in <sup>4</sup>	S <sub>left</sub> =	39.09 in <sup>3</sup>	I <sub>y</sub> =	240.37 in <sup>4</sup>	S <sub>left</sub> =	39.09 in <sup>3</sup>
C <sub>right</sub> =	6.1500 in	A =	24.6900 in <sup>2</sup>	C <sub>right</sub> =	6.1500 in	A =	24.6900 in <sup>2</sup>
C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.1202 in	C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.1202 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	322.59 k-ft	322.59 k-ft
V	226.55 k	226.55 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



Made By CTG  
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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x101	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	6.0000 in
$C_1 = d =$	11.7500 in	$C_2 = t =$	0.6250 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	12.1875 in
$B_3 = t =$	0.5000 in	$GAP =$	0.4375 in

\*select from dropdown list

Coped Stringer S7-12 @ FB D2

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	11.7875	115.9890	0.5248	5.9312	346.1585	346.6833
	Web	5.4750	5.9125	32.3709	54.7055	0.0562	0.0173	54.7228
2	Horizontal Legs	6.7188	0.3125	2.0996	0.2187	5.5438	206.4948	206.7135
	Vertical Legs	7.5000	3.0000	22.5000	22.5000	2.8563	61.1899	83.6899
3	Additional Plate	0.0000	0.4375	0.0000	0.0000	5.4188	0.0000	0.0000
<b>Total</b>		<b>29.53</b>		<b>172.96</b>	<b>77.95</b>		<b>613.86</b>	<b>691.81</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	5.8563 in	S <sub>top</sub> =	109.27 in <sup>3</sup>	y-bar =	5.8563 in	S <sub>top</sub> =	109.27 in <sup>3</sup>
I <sub>x</sub> =	691.81 in <sup>4</sup>	S <sub>bott.</sub> =	118.13 in <sup>3</sup>	I <sub>x</sub> =	691.81 in <sup>4</sup>	S <sub>bott.</sub> =	118.13 in <sup>3</sup>
C <sub>top</sub> =	6.3312 in	A =	29.5338 in <sup>2</sup>	C <sub>top</sub> =	6.3312 in	A =	29.5338 in <sup>2</sup>
C <sub>bottom</sub> =	5.8563 in	r <sub>x</sub> =	4.8399 in	C <sub>bottom</sub> =	5.8563 in	r <sub>x</sub> =	4.8399 in
J =	4.4068 in <sup>4</sup>	Z =	129.80 in <sup>3</sup>	Z =	129.80 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	6.2500	61.5000	124.0578	0.0000	0.0000	124.0578
	Web		5.4750	6.2500	34.2188	0.1141	0.0000	0.0000	0.1141
2 (Left)	Horizontal Leg		3.3594	2.6875	9.0283	8.0879	3.5625	42.6352	50.7231
	Vertical Leg		3.7500	5.6875	21.3281	0.1221	0.5625	1.1865	1.3086
2 (Right)	Horizontal Leg		3.3594	9.8125	32.9639	8.0879	3.5625	42.6352	50.7231
	Vertical Leg		3.7500	6.8125	25.5469	0.1221	0.5625	1.1865	1.3086
3	Additional Plate		0.0000	6.2500	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>29.53</b>		<b>184.59</b>	<b>140.59</b>		<b>87.64</b>	<b>228.24</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.2500 in	S <sub>right</sub> =	36.52 in <sup>3</sup>	x-bar =	6.2500 in	S <sub>right</sub> =	36.52 in <sup>3</sup>
I <sub>y</sub> =	228.24 in <sup>4</sup>	S <sub>left</sub> =	36.52 in <sup>3</sup>	I <sub>y</sub> =	228.24 in <sup>4</sup>	S <sub>left</sub> =	36.52 in <sup>3</sup>
C <sub>right</sub> =	6.2500 in	A =	29.5338 in <sup>2</sup>	C <sub>right</sub> =	6.2500 in	A =	29.5338 in <sup>2</sup>
C <sub>left</sub> =	6.2500 in	r <sub>y</sub> =	2.7799 in	C <sub>left</sub> =	6.2500 in	r <sub>y</sub> =	2.7799 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	389.40 k-ft	389.40 k-ft
V	254.61 k	254.61 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section*	W21x101	Bottom Angles:	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	12.2500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	12.7500 in
$B_3 = t =$	0.5000 in	Gap =	0.5000 in

\*select from dropdown list

Coped Stringer S7-12 @ FB D3

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	12.3500	121.5240	0.5248	5.3268	279.2054	279.7302
	Web	5.7250	6.2250	35.6381	62.5468	0.7982	3.6478	66.1946
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.7732	160.5680	160.6409
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.0232	97.1180	115.1180
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.5232	0.0000	0.0000
<b>Total</b>		<b>25.07</b>		<b>176.04</b>	<b>81.14</b>		<b>540.54</b>	<b>621.68</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	7.0232	in	S <sub>top</sub> = 108.56 in <sup>3</sup>	y-bar =	7.0232	in	S <sub>top</sub> = 108.56 in <sup>3</sup>
I <sub>x</sub> =	621.68	in <sup>4</sup>	S <sub>bott.</sub> = 88.52 in <sup>3</sup>	I <sub>x</sub> =	621.68	in <sup>4</sup>	S <sub>bott.</sub> = 88.52 in <sup>3</sup>
C <sub>top</sub> =	5.7268	in	A = 25.0650 in <sup>2</sup>	C <sub>top</sub> =	5.7268	in	A = 25.0650 in <sup>2</sup>
C <sub>bottom</sub> =	7.0232	in	r <sub>x</sub> = 4.9802 in	C <sub>bottom</sub> =	7.0232	in	r <sub>x</sub> = 4.9802 in
J =	3.3680	in <sup>4</sup>	Z = 116.86 in <sup>3</sup>	Z =	116.86	in <sup>3</sup>	

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	4.2500	41.8200	124.0578	1.9000	35.5224	159.5802
	Web		5.7250	4.2500	24.3313	0.1193	1.9000	20.6673	20.7865
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.4000	33.8800	35.6665
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.4000	17.2800	17.3425
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.6000	0.6300	2.4165
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.4000	5.8800	5.9425
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	1.9000	0.0000	0.0000
<b>Total</b>			<b>25.07</b>		<b>106.53</b>	<b>127.87</b>		<b>113.86</b>	<b>241.73</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.1500	in	S <sub>right</sub> = 39.31 in <sup>3</sup>	x-bar =	6.1500	in	S <sub>right</sub> = 39.31 in <sup>3</sup>
I <sub>y</sub> =	241.73	n <sup>4</sup>	S <sub>left</sub> = 39.31 in <sup>3</sup>	I <sub>y</sub> =	241.73	n <sup>4</sup>	S <sub>left</sub> = 39.31 in <sup>3</sup>
C <sub>right</sub> =	6.1500	in	A = 25.0650 in <sup>2</sup>	C <sub>right</sub> =	6.1500	in	A = 25.0650 in <sup>2</sup>
C <sub>left</sub> =	6.1500	in	r <sub>y</sub> = 3.1055 in	C <sub>left</sub> =	6.1500	in	r <sub>y</sub> = 3.1055 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	350.58 k-ft	350.58 k-ft
V	234.38 k	234.38 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





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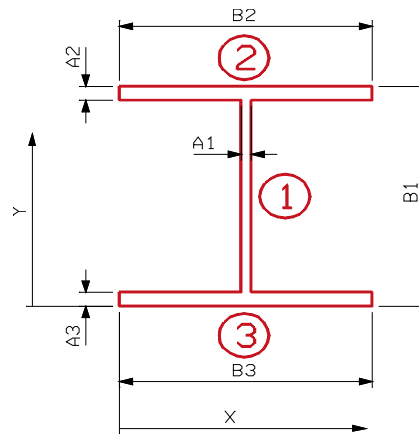
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 35.5000$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F2A-12**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		12.7500	17.7500	226.3125	1228.2500	0.0000	0.0000	1228.2500
2	Top Flange		6.0000	35.1250	210.7500	0.2813	17.3750	1811.3438	1811.6250
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	17.3750	1811.3438	1811.6250
<b>Total</b>			<b>24.75</b>		<b>439.31</b>	<b>1228.81</b>		<b>3622.69</b>	<b>4851.50</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	17.7500	in	$S_{top} = 273.32$	in <sup>3</sup>	y-bar =	17.7500	in	$S_{top} = 273.32$	in <sup>3</sup>		
$I_x =$	4851.50	n <sup>4</sup>	$S_{bott.} = 273.32$	in <sup>3</sup>	$I_x =$	4851.50	n <sup>4</sup>	$S_{bott.} = 273.32$	in <sup>3</sup>		
$C_{top} =$	17.7500	in	A =	24.7500	in <sup>2</sup>	$C_{top} =$	17.7500	in	A =	24.7500	in <sup>2</sup>
$C_{bottom} =$	17.7500	in	$r_x =$	14.0007	in	$C_{bottom} =$	17.7500	in	$r_x =$	14.0007	in
J =	2.8477	in <sup>4</sup>	Z =	316.88	in <sup>3</sup>	Z =	316.88	in <sup>3</sup>			



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 Date 3/26/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		12.7500	4.0000	51.0000	0.1494	0.0000	0.0000	0.1494
2	Top Flange		6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange		6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>			<b>24.75</b>		<b>99.00</b>	<b>64.15</b>		<b>0.00</b>	<b>64.15</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	4.0000	in	S <sub>right</sub> =	16.04	in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> =	16.04	in <sup>3</sup>
I <sub>y</sub> =	64.15	in <sup>4</sup>	S <sub>left</sub> =	16.04	in <sup>3</sup>	I <sub>y</sub> =	64.15	in <sup>4</sup>	S <sub>left</sub> =	16.04	in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A =	24.7500	in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A =	24.7500	in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> =	1.6099	in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> =	1.6099	in

Non-composite Capacities*		
	AB	AI
M	950.63 k-ft	950.63 k-ft
V	202.41 k	202.41 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/26/2012

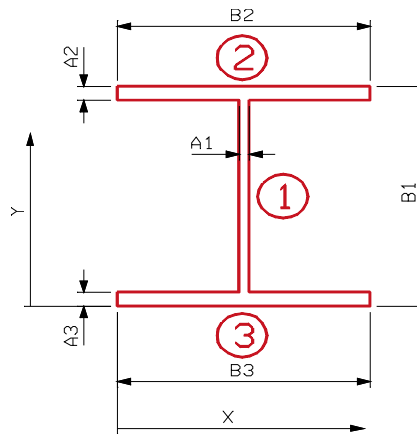
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 35.5313$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F2B-12 Avg**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		12.7617	17.7656	226.7199	1231.6398	0.0000	0.0000	1231.6398
2	Top Flange		6.0000	35.1563	210.9375	0.2813	17.3906	1814.6030	1814.8843
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	17.3906	1814.6030	1814.8843
<b>Total</b>			<b>24.76</b>		<b>439.91</b>	<b>1232.20</b>		<b>3629.21</b>	<b>4861.41</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	17.7656	in	$S_{top} = 273.64$	$in^3$	y-bar =	17.7656	in	$S_{top} = 273.64$	$in^3$		
$I_x =$	4861.41	$n^4$	$S_{bott.} = 273.64$	$in^3$	$I_x =$	4861.41	$n^4$	$S_{bott.} = 273.64$	$in^3$		
$C_{top} =$	17.7656	in	A =	24.7617	$in^2$	$C_{top} =$	17.7656	in	A =	24.7617	$in^2$
$C_{bottom} =$	17.7656	in	$r_x =$	14.0117	in	$C_{bottom} =$	17.7656	in	$r_x =$	14.0117	in
J =	2.8482	$in^4$	Z =	317.26	$in^3$	J =	2.8482	$in^4$	Z =	317.26	$in^3$



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	12.7617	4.0000	51.0469	0.1496	0.0000	0.0000	0.1496
2	Top Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>		<b>24.76</b>		<b>99.05</b>	<b>64.15</b>		<b>0.00</b>	<b>64.15</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 16.04 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 16.04 in <sup>3</sup>
I <sub>y</sub> =	64.15	in <sup>4</sup>	S <sub>left</sub> = 16.04 in <sup>3</sup>	I <sub>y</sub> =	64.15	in <sup>4</sup>	S <sub>left</sub> = 16.04 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 24.7617 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 24.7617 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.6096 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.6096 in

Non-composite Capacities*		
	AB	AI
M	951.79 k-ft	951.79 k-ft
V	202.22 k	202.22 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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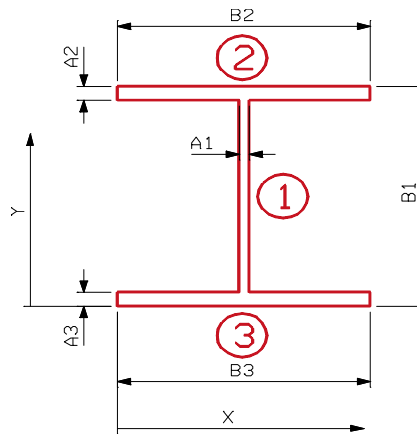
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 30.0000$  in
- $A_2 = t_f = 1.2500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 1.2500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F1-13**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		10.3125	15.0000	154.6875	649.9023	0.0000	0.0000	649.9023
2	Top Flange		10.0000	29.3750	293.7500	1.3021	14.3750	2066.4063	2067.7083
3	Bottom Flange		10.0000	0.6250	6.2500	1.3021	14.3750	2066.4063	2067.7083
<b>Total</b>			<b>30.31</b>		<b>454.69</b>	<b>652.51</b>		<b>4132.81</b>	<b>4785.32</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	15.0000	in	$S_{top} = 319.02$	in <sup>3</sup>	y-bar =	15.0000	in	$S_{top} = 319.02$	in <sup>3</sup>		
$I_x =$	4785.32	n <sup>4</sup>	$S_{bott.} = 319.02$	in <sup>3</sup>	$I_x =$	4785.32	n <sup>4</sup>	$S_{bott.} = 319.02$	in <sup>3</sup>		
$C_{top} =$	15.0000	in	A =	30.3125	in <sup>2</sup>	$C_{top} =$	15.0000	in	A =	30.3125	in <sup>2</sup>
$C_{bottom} =$	15.0000	in	$r_x =$	12.5645	in	$C_{bottom} =$	15.0000	in	$r_x =$	12.5645	in
J =	10.9001	in <sup>4</sup>	Z =	358.40	in <sup>3</sup>	Z =	358.40	in <sup>3</sup>			



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	10.3125	4.0000	41.2500	0.1208	0.0000	0.0000	0.1208
2	Top Flange	10.0000	4.0000	40.0000	53.3333	0.0000	0.0000	53.3333
3	Bottom Flange	10.0000	4.0000	40.0000	53.3333	0.0000	0.0000	53.3333
<b>Total</b>		<b>30.31</b>		<b>121.25</b>	<b>106.79</b>		<b>0.00</b>	<b>106.79</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 26.70 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 26.70 in <sup>3</sup>
I <sub>y</sub> =	106.79	in <sup>4</sup>	S <sub>left</sub> = 26.70 in <sup>3</sup>	I <sub>y</sub> =	106.79	in <sup>4</sup>	S <sub>left</sub> = 26.70 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 30.3125 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 30.3125 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.8769 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.8769 in

Non-composite Capacities*		
	AB	AI
M	1075.20 k-ft	1075.20 k-ft
V	207.62 k	207.62 k

\*Compact Section

F <sub>y</sub> =	36.00 ksi
------------------	-----------

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Job No. P402110046  
Sheet No. \_\_\_\_\_

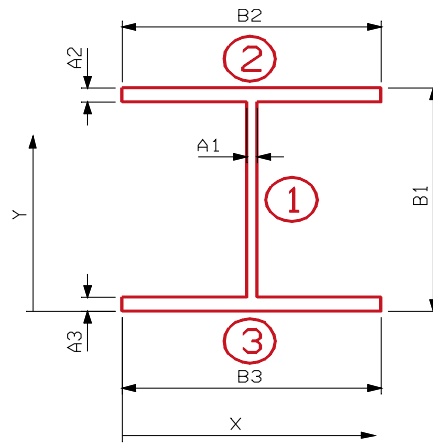
Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 14.1250$  in
- $A_2 = t_f = 1.2500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.7500$  in

$d_o = 15.0000$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F1-13 @ FB E1**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		4.5469	7.0625	32.1123	55.7051	0.9706	4.2832	59.9884
2	Top Flange		10.0000	13.5000	135.0000	1.3021	5.4669	298.8724	300.1745
3	Bottom Flange		6.5625	0.3750	2.4609	0.3076	7.6581	384.8654	385.1730
<b>Total</b>			<b>21.11</b>		<b>169.57</b>	<b>57.31</b>		<b>688.02</b>	<b>745.34</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	8.0331	in	$S_{top} = 122.35$	$in^3$	y-bar =	8.0331	in	$S_{top} = 122.35$	$in^3$		
$I_x =$	745.34	$in^4$	$S_{bott.} = 92.78$	$in^3$	$I_x =$	745.34	$in^4$	$S_{bott.} = 92.78$	$in^3$		
$C_{top} =$	6.0919	in	A =	21.1094	$in^2$	$C_{top} =$	6.0919	in	A =	21.1094	$in^2$
$C_{bottom} =$	8.0331	in	$r_x =$	5.9421	in	$C_{bottom} =$	8.0331	in	$r_x =$	5.9421	in
J =	6.6519	$in^4$	Z =	115.03	$in^3$	Z =	115.03	$in^3$			



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Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		4.5469	4.3750	19.8926	0.0533	0.0000	0.0000	0.0533
2	Top Flange		10.0000	4.3750	43.7500	53.3333	0.0000	0.0000	53.3333
3	Bottom Flange		6.5625	4.3750	28.7109	41.8701	0.0000	0.0000	41.8701
<b>Total</b>			<b>21.11</b>		<b>92.35</b>	<b>95.26</b>		<b>0.00</b>	<b>95.26</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	4.3750	in	S <sub>right</sub> =	21.77	in <sup>3</sup>	x-bar =	4.3750	in	S <sub>right</sub> =	21.77	in <sup>3</sup>
I <sub>y</sub> =	95.26	in <sup>4</sup>	S <sub>left</sub> =	21.77	in <sup>3</sup>	I <sub>y</sub> =	95.26	in <sup>4</sup>	S <sub>left</sub> =	21.77	in <sup>3</sup>
C <sub>right</sub> =	4.3750	in	A =	21.1094	in <sup>2</sup>	C <sub>right</sub> =	4.3750	in	A =	21.1094	in <sup>2</sup>
C <sub>left</sub> =	4.3750	in	r <sub>y</sub> =	2.1243	in	C <sub>left</sub> =	4.3750	in	r <sub>y</sub> =	2.1243	in

Non-composite Capacities*		
	AB	AI
M	345.08 k-ft	345.08 k-ft
V	94.94 k	94.94 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear





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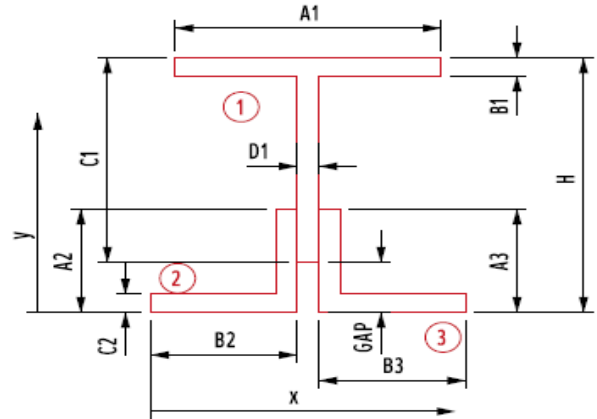
Date 3/14/2012  
 Date 3/27/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W18x55	Left Angle:	
$A_1 = b_f =$	7.5300 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6300 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	7.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3900 in	Right Angle:	
		$A_3 = L_v =$	6.0000 in
		$B_3 = L_h =$	6.0000 in
		$C_3 = t =$	0.5000 in
		Miscellaneous:	
		H =	8.0000 in
		Gap =	0.5000 in



**Coped Stringer S1-13 @ FB D3**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	4.7439	7.6850	36.4569	0.1569	3.9957	75.7375	75.8944
	Web	2.6793	3.9350	10.5430	10.5379	0.2457	0.1617	10.6996
2	Horizontal Legs	1.7500	0.2500	0.4375	0.0365	3.4393	20.7009	20.7374
	Vertical Legs	3.0000	3.0000	9.0000	9.0000	0.6893	1.4256	10.4256
3	Horizontal Legs	2.7500	0.2500	0.6875	0.0573	3.4393	32.5301	32.5874
	Vertical Legs	3.0000	3.0000	9.0000	9.0000	0.6893	1.4256	10.4256
<b>Total</b>		<b>17.92</b>		<b>66.12</b>	<b>28.79</b>		<b>131.98</b>	<b>160.77</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	3.6893 in	S <sub>top</sub> =	37.30 in <sup>3</sup>	y-bar =	3.6893 in	S <sub>top</sub> =	37.30 in <sup>3</sup>
I <sub>x</sub> =	160.77 in <sup>4</sup>	S <sub>bottom</sub> =	43.58 in <sup>3</sup>	I <sub>x</sub> =	160.77 in <sup>4</sup>	S <sub>bottom</sub> =	43.58 in <sup>3</sup>
C <sub>top</sub> =	4.3107 in	A =	17.9232 in <sup>2</sup>	C <sub>top</sub> =	4.3107 in	A =	17.9232 in <sup>2</sup>
C <sub>bottom</sub> =	3.6893 in	r <sub>x</sub> =	2.9950 in	C <sub>bottom</sub> =	3.6893 in	r <sub>x</sub> =	2.9950 in
J =	1.6385 in <sup>4</sup>	Z =	48.37 in <sup>3</sup>	Z =	48.37 in <sup>3</sup>		



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		4.7439	4.1950	19.9007	22.4153	0.2898	0.3985	22.8138
	Web		2.6793	4.1950	11.2397	0.0340	0.2898	0.2251	0.2591
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.7348	13.0889	14.8754
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.7348	1.6200	1.6825
3 (Right)	Horizontal Leg		2.7500	7.6400	21.0100	6.9323	3.1552	27.3762	34.3085
	Vertical Leg		3.0000	4.6400	13.9200	0.0625	0.1552	0.0722	0.1347
<b>Total</b>			<b>17.92</b>		<b>80.38</b>	<b>31.29</b>		<b>42.78</b>	<b>74.07</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	4.4848	in	S <sub>right</sub> =	12.54	in <sup>3</sup>	x-bar =	4.4848	in	S <sub>right</sub> =	12.54	in <sup>3</sup>
I <sub>y</sub> =	74.07	in <sup>4</sup>	S <sub>left</sub> =	16.52	in <sup>3</sup>	I <sub>y</sub> =	74.07	in <sup>4</sup>	S <sub>left</sub> =	16.52	in <sup>3</sup>
C <sub>right</sub> =	5.9052	in	A =	17.9232	in <sup>2</sup>	C <sub>right</sub> =	5.9052	in	A =	17.9232	in <sup>2</sup>
C <sub>left</sub> =	4.4848	in	r <sub>y</sub> =	2.0329	in	C <sub>left</sub> =	4.4848	in	r <sub>y</sub> =	2.0329	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	145.11 k-ft	145.11 k-ft
V	170.78 k	170.78 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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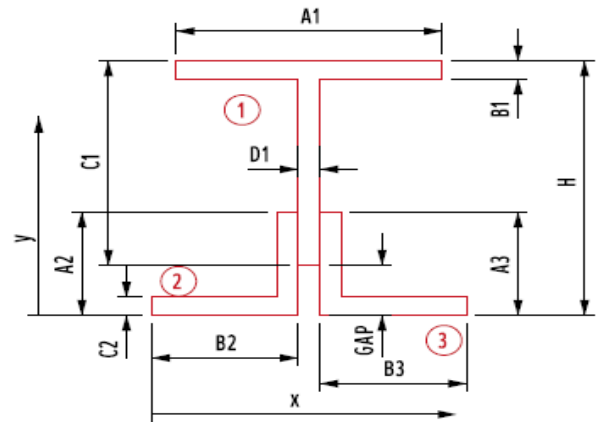
Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W18x55	Left Angle:	
$A_1 = b_f =$	7.5300 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6300 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	8.0000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3900 in	Right Angle:	
		$A_3 = L_v =$	6.0000 in
		$B_3 = L_h =$	6.0000 in
		$C_3 = t =$	0.5000 in
		Miscellaneous:	
		H =	8.5000 in
		Gap =	0.5000 in



**Coped Stringer S2-13 @ FB D3**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	4.7439	8.1850	38.8288	0.1569	4.3224	88.6323	88.7892
	Web	2.8743	4.1850	12.0289	13.0103	0.3224	0.2988	13.3091
2	Horizontal Legs	1.7500	0.2500	0.4375	0.0365	3.6126	22.8386	22.8751
	Vertical Legs	3.0000	3.0000	9.0000	9.0000	0.8626	2.2321	11.2321
3	Horizontal Legs	2.7500	0.2500	0.6875	0.0573	3.6126	35.8893	35.9466
	Vertical Legs	3.0000	3.0000	9.0000	9.0000	0.8626	2.2321	11.2321
<b>Total</b>		<b>18.12</b>		<b>69.98</b>	<b>31.26</b>		<b>152.12</b>	<b>183.38</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	3.8626 in	S <sub>top</sub> =	39.54 in <sup>3</sup>	y-bar =	3.8626 in	S <sub>top</sub> =	39.54 in <sup>3</sup>
I <sub>x</sub> =	183.38 in <sup>4</sup>	S <sub>bottom</sub> =	47.48 in <sup>3</sup>	I <sub>x</sub> =	183.38 in <sup>4</sup>	S <sub>bottom</sub> =	47.48 in <sup>3</sup>
C <sub>top</sub> =	4.6374 in	A =	18.1182 in <sup>2</sup>	C <sub>top</sub> =	4.6374 in	A =	18.1182 in <sup>2</sup>
C <sub>bottom</sub> =	3.8626 in	r <sub>x</sub> =	3.1814 in	C <sub>bottom</sub> =	3.8626 in	r <sub>x</sub> =	3.1814 in
J =	1.6483 in <sup>4</sup>	Z =	51.57 in <sup>3</sup>			Z =	51.57 in <sup>3</sup>



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Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		4.7439	4.1950	19.9007	22.4153	0.2867	0.3900	22.8053
	Web		2.8743	4.1950	12.0577	0.0364	0.2867	0.2363	0.2727
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.7317	13.0591	14.8456
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.7317	1.6063	1.6688
3 (Right)	Horizontal Leg		2.7500	7.6400	21.0100	6.9323	3.1583	27.4304	34.3627
	Vertical Leg		3.0000	4.6400	13.9200	0.0625	0.1583	0.0751	0.1376
<b>Total</b>			<b>18.12</b>		<b>81.20</b>	<b>31.30</b>		<b>42.80</b>	<b>74.09</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	4.4817	in	S <sub>right</sub> =	12.54	in <sup>3</sup>	x-bar =	4.4817	in	S <sub>right</sub> =	12.54	in <sup>3</sup>
I <sub>y</sub> =	74.09	in <sup>4</sup>	S <sub>left</sub> =	16.53	in <sup>3</sup>	I <sub>y</sub> =	74.09	in <sup>4</sup>	S <sub>left</sub> =	16.53	in <sup>3</sup>
C <sub>right</sub> =	5.9083	in	A =	18.1182	in <sup>2</sup>	C <sub>right</sub> =	5.9083	in	A =	18.1182	in <sup>2</sup>
C <sub>left</sub> =	4.4817	in	r <sub>y</sub> =	2.0222	in	C <sub>left</sub> =	4.4817	in	r <sub>y</sub> =	2.0222	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	154.71 k-ft	154.71 k-ft
V	174.86 k	174.86 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x55	<b>Bottom Angles:</b>	
$A_1 = b_f =$	7.5300 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6300 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	10.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3900 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	10.8750 in
$B_3 = t =$	0.3900 in	$GAP =$	0.3750 in

\*select from dropdown list

Coped Stringer S3-13 @ FB D3

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	4.7439	10.5600	50.0956	0.1569	5.6183	149.7450	149.9019
	Web	3.8493	5.3100	20.4398	31.2489	0.3683	0.5223	31.7712
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	4.6917	77.0407	77.1136
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	1.9417	22.6202	40.6202
3	Additional Plate	0.0000	0.3750	0.0000	0.0000	4.5667	0.0000	0.0000
<b>Total</b>		<b>18.09</b>		<b>89.41</b>	<b>49.48</b>		<b>249.93</b>	<b>299.41</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	4.9417 in	S <sub>top</sub> =	50.46 in <sup>3</sup>	y-bar =	4.9417 in	S <sub>top</sub> =	50.46 in <sup>3</sup>
I <sub>x</sub> =	299.41 in <sup>4</sup>	S <sub>bottom</sub> =	60.59 in <sup>3</sup>	I <sub>x</sub> =	299.41 in <sup>4</sup>	S <sub>bottom</sub> =	60.59 in <sup>3</sup>
C <sub>top</sub> =	5.9333 in	A =	18.0932 in <sup>2</sup>	C <sub>top</sub> =	5.9333 in	A =	18.0932 in <sup>2</sup>
C <sub>bottom</sub> =	4.9417 in	r <sub>x</sub> =	4.0679 in	C <sub>bottom</sub> =	4.9417 in	r <sub>x</sub> =	4.0679 in
J =	1.6144 in <sup>4</sup>	Z =	64.40 in <sup>3</sup>			Z =	64.40 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		4.7439	4.1950	19.9007	22.4153	0.0000	0.0000	22.4153
	Web		3.8493	4.1950	16.1478	0.0488	0.0000	0.0000	0.0488
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.4450	10.4615	12.2480
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.4450	0.5941	0.6566
2 (Right)	Horizontal Leg		1.7500	6.6400	11.6200	1.7865	2.4450	10.4615	12.2480
	Vertical Leg		3.0000	4.6400	13.9200	0.0625	0.4450	0.5941	0.6566
3	Additional Plate		0.0000	4.1950	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>18.09</b>		<b>75.90</b>	<b>26.16</b>		<b>22.11</b>	<b>48.27</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.1950 in	S <sub>right</sub> =	11.51 in <sup>3</sup>	x-bar =	4.1950 in	S <sub>right</sub> =	11.51 in <sup>3</sup>
I <sub>y</sub> =	48.27 in <sup>4</sup>	S <sub>left</sub> =	11.51 in <sup>3</sup>	I <sub>y</sub> =	48.27 in <sup>4</sup>	S <sub>left</sub> =	11.51 in <sup>3</sup>
C <sub>right</sub> =	4.1950 in	A =	18.0932 in <sup>2</sup>	C <sub>right</sub> =	4.1950 in	A =	18.0932 in <sup>2</sup>
C <sub>left</sub> =	4.1950 in	r <sub>y</sub> =	1.6334 in	C <sub>left</sub> =	4.1950 in	r <sub>y</sub> =	1.6334 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	193.20 k-ft	193.20 k-ft
V	195.21 k	195.21 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x71	<b>Bottom Angles:</b>	
$A_1 = b_f =$	7.6400 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8100 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	11.0000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.4950 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	11.3750 in
$B_3 = t =$	0.4950 in	$GAP =$	0.3750 in

\*select from dropdown list

Coped Stringer S4-13 @ FB D3

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.1884	10.9700	67.8867	0.3384	5.4544	184.1053	184.4436
	Web	5.0441	5.4700	27.5910	43.6462	0.0456	0.0105	43.6567
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.2656	97.0443	97.1172
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	2.5156	37.9706	55.9706
3	Additional Plate	0.0000	0.3750	0.0000	0.0000	5.1406	0.0000	0.0000
<b>Total</b>		<b>20.73</b>		<b>114.35</b>	<b>62.06</b>		<b>319.13</b>	<b>381.19</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	5.5156 in	S <sub>top</sub> =	65.06 in <sup>3</sup>	y-bar =	5.5156 in	S <sub>top</sub> =	65.06 in <sup>3</sup>
I <sub>x</sub> =	381.19 in <sup>4</sup>	S <sub>bottom</sub> =	69.11 in <sup>3</sup>	I <sub>x</sub> =	381.19 in <sup>4</sup>	S <sub>bottom</sub> =	69.11 in <sup>3</sup>
C <sub>top</sub> =	5.8594 in	A =	20.7325 in <sup>2</sup>	C <sub>top</sub> =	5.8594 in	A =	20.7325 in <sup>2</sup>
C <sub>bottom</sub> =	5.5156 in	r <sub>x</sub> =	4.2879 in	C <sub>bottom</sub> =	5.5156 in	r <sub>x</sub> =	4.2879 in
J =	2.5570 in <sup>4</sup>	Z =	79.41 in <sup>3</sup>			Z =	79.41 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.1884	4.2475	26.2852	30.1012	0.0000	0.0000	30.1012
	Web		5.0441	4.2475	21.4246	0.1030	0.0000	0.0000	0.1030
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.4975	10.9156	12.7021
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.4975	0.7425	0.8050
2 (Right)	Horizontal Leg		1.7500	6.7450	11.8038	1.7865	2.4975	10.9156	12.7021
	Vertical Leg		3.0000	4.7450	14.2350	0.0625	0.4975	0.7425	0.8050
3	Additional Plate		0.0000	4.2475	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>20.73</b>		<b>88.06</b>	<b>33.90</b>		<b>23.32</b>	<b>57.22</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.2475 in	S <sub>right</sub> =	13.47 in <sup>3</sup>	x-bar =	4.2475 in	S <sub>right</sub> =	13.47 in <sup>3</sup>
I <sub>y</sub> =	57.22 in <sup>4</sup>	S <sub>left</sub> =	13.47 in <sup>3</sup>	I <sub>y</sub> =	57.22 in <sup>4</sup>	S <sub>left</sub> =	13.47 in <sup>3</sup>
C <sub>right</sub> =	4.2475 in	A =	20.7325 in <sup>2</sup>	C <sub>right</sub> =	4.2475 in	A =	20.7325 in <sup>2</sup>
C <sub>left</sub> =	4.2475 in	r <sub>y</sub> =	1.6613 in	C <sub>left</sub> =	4.2475 in	r <sub>y</sub> =	1.6613 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	238.23 k-ft	238.23 k-ft
V	220.16 k	220.16 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x71	<b>Bottom Angles:</b>	
$A_1 = b_f =$	7.6400 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8100 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	11.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.4950 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	11.8125 in
$B_3 = t =$	0.4950 in	$GAP =$	0.3125 in

\*select from dropdown list

Coped Stringer S5-13 @ FB D3

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.1884	11.4075	70.5942	0.3384	5.7161	202.1957	202.5341
	Web	5.2916	5.6575	29.9369	50.3915	0.0339	0.0061	50.3976
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.4414	103.6324	103.7053
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	2.6914	43.4631	61.4631
3	Additional Plate	0.0000	0.3125	0.0000	0.0000	5.3789	0.0000	0.0000
<b>Total</b>		<b>20.98</b>		<b>119.41</b>	<b>68.80</b>		<b>349.30</b>	<b>418.10</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	5.6914 in	S <sub>top</sub> =	68.31 in <sup>3</sup>	y-bar =	5.6914 in	S <sub>top</sub> =	68.31 in <sup>3</sup>
I <sub>x</sub> =	418.10 in <sup>4</sup>	S <sub>bot.</sub> =	73.46 in <sup>3</sup>	I <sub>x</sub> =	418.10 in <sup>4</sup>	S <sub>bot.</sub> =	73.46 in <sup>3</sup>
C <sub>top</sub> =	6.1211 in	A =	20.9800 in <sup>2</sup>	C <sub>top</sub> =	6.1211 in	A =	20.9800 in <sup>2</sup>
C <sub>bottom</sub> =	5.6914 in	r <sub>x</sub> =	4.4641 in	C <sub>bottom</sub> =	5.6914 in	r <sub>x</sub> =	4.4641 in
J =	2.5773 in <sup>4</sup>	Z =	83.56 in <sup>3</sup>			Z =	83.56 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.1884	4.2475	26.2852	30.1012	0.0000	0.0000	30.1012
	Web		5.2916	4.2475	22.4759	0.1080	0.0000	0.0000	0.1080
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.4975	10.9156	12.7021
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.4975	0.7425	0.8050
2 (Right)	Horizontal Leg		1.7500	6.7450	11.8038	1.7865	2.4975	10.9156	12.7021
	Vertical Leg		3.0000	4.7450	14.2350	0.0625	0.4975	0.7425	0.8050
3	Additional Plate		0.0000	4.2475	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>20.98</b>		<b>89.11</b>	<b>33.91</b>		<b>23.32</b>	<b>57.22</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.2475 in	S <sub>right</sub> =	13.47 in <sup>3</sup>	x-bar =	4.2475 in	S <sub>right</sub> =	13.47 in <sup>3</sup>
I <sub>y</sub> =	57.22 in <sup>4</sup>	S <sub>left</sub> =	13.47 in <sup>3</sup>	I <sub>y</sub> =	57.22 in <sup>4</sup>	S <sub>left</sub> =	13.47 in <sup>3</sup>
C <sub>right</sub> =	4.2475 in	A =	20.9800 in <sup>2</sup>	C <sub>right</sub> =	4.2475 in	A =	20.9800 in <sup>2</sup>
C <sub>left</sub> =	4.2475 in	r <sub>y</sub> =	1.6515 in	C <sub>left</sub> =	4.2475 in	r <sub>y</sub> =	1.6515 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	250.68 k-ft	250.68 k-ft
V	225.33 k	225.33 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



Made By CTG  
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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x71	<b>Bottom Angles:</b>	
$A_1 = b_f =$	7.6400 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8100 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	11.7500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.4950 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	12.2500 in
$B_3 = t =$	0.4950 in	$GAP =$	0.5000 in

\*select from dropdown list

Coped Stringer S6-13 @ FB D3

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.1884	11.8450	73.3016	0.3384	5.9453	218.7373	219.0757
	Web	5.4153	5.9700	32.3293	54.0102	0.0703	0.0267	54.0370
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.6497	111.7177	111.7906
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	2.8997	50.4503	68.4503
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.3997	0.0000	0.0000
<b>Total</b>		<b>21.10</b>		<b>124.51</b>	<b>72.42</b>		<b>380.93</b>	<b>453.35</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	5.8997 in	S <sub>top</sub> =	71.39 in <sup>3</sup>	y-bar =	5.8997 in	S <sub>top</sub> =	71.39 in <sup>3</sup>
I <sub>x</sub> =	453.35 in <sup>4</sup>	S <sub>bottom</sub> =	76.84 in <sup>3</sup>	I <sub>x</sub> =	453.35 in <sup>4</sup>	S <sub>bottom</sub> =	76.84 in <sup>3</sup>
C <sub>top</sub> =	6.3503 in	A =	21.1037 in <sup>2</sup>	C <sub>top</sub> =	6.3503 in	A =	21.1037 in <sup>2</sup>
C <sub>bottom</sub> =	5.8997 in	r <sub>x</sub> =	4.6349 in	C <sub>bottom</sub> =	5.8997 in	r <sub>x</sub> =	4.6349 in
J =	2.5874 in <sup>4</sup>	Z =	87.24 in <sup>3</sup>			Z =	87.24 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.1884	4.2475	26.2852	30.1012	0.0000	0.0000	30.1012
	Web		5.4153	4.2475	23.0015	0.1106	0.0000	0.0000	0.1106
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.4975	10.9156	12.7021
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.4975	0.7425	0.8050
2 (Right)	Horizontal Leg		1.7500	6.7450	11.8038	1.7865	2.4975	10.9156	12.7021
	Vertical Leg		3.0000	4.7450	14.2350	0.0625	0.4975	0.7425	0.8050
3	Additional Plate		0.0000	4.2475	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>21.10</b>		<b>89.64</b>	<b>33.91</b>		<b>23.32</b>	<b>57.23</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.2475 in	S <sub>right</sub> =	13.47 in <sup>3</sup>	x-bar =	4.2475 in	S <sub>right</sub> =	13.47 in <sup>3</sup>
I <sub>y</sub> =	57.23 in <sup>4</sup>	S <sub>left</sub> =	13.47 in <sup>3</sup>	I <sub>y</sub> =	57.23 in <sup>4</sup>	S <sub>left</sub> =	13.47 in <sup>3</sup>
C <sub>right</sub> =	4.2475 in	A =	21.1037 in <sup>2</sup>	C <sub>right</sub> =	4.2475 in	A =	21.1037 in <sup>2</sup>
C <sub>left</sub> =	4.2475 in	r <sub>y</sub> =	1.6467 in	C <sub>left</sub> =	4.2475 in	r <sub>y</sub> =	1.6467 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	261.72 k-ft	261.72 k-ft
V	227.91 k	227.91 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



Made By CTG  
Checked By DMP

Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x71	<b>Bottom Angles:</b>	
$A_1 = b_f =$	7.6400 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8100 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	12.2500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.4950 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	12.7500 in
$B_3 = t =$	0.4950 in	$GAP =$	0.5000 in

\*select from dropdown list

Coped Stringer S7-13 @ FB D3

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.1884	12.3450	76.3958	0.3384	6.2332	240.4396	240.7780
	Web	5.6628	6.2200	35.2226	61.7593	0.1082	0.0663	61.8256
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.8618	120.2608	120.3337
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.1118	58.0983	76.0983
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.6118	0.0000	0.0000
<b>Total</b>		<b>21.35</b>		<b>130.49</b>	<b>80.17</b>		<b>418.87</b>	<b>499.04</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.1118 in	S <sub>top</sub> =	75.18 in <sup>3</sup>	y-bar =	6.1118 in	S <sub>top</sub> =	75.18 in <sup>3</sup>
I <sub>x</sub> =	499.04 in <sup>4</sup>	S <sub>bottom</sub> =	81.65 in <sup>3</sup>	I <sub>x</sub> =	499.04 in <sup>4</sup>	S <sub>bottom</sub> =	81.65 in <sup>3</sup>
C <sub>top</sub> =	6.6382 in	A =	21.3512 in <sup>2</sup>	C <sub>top</sub> =	6.6382 in	A =	21.3512 in <sup>2</sup>
C <sub>bottom</sub> =	6.1118 in	r <sub>x</sub> =	4.8345 in	C <sub>bottom</sub> =	6.1118 in	r <sub>x</sub> =	4.8345 in
J =	2.6076 in <sup>4</sup>	Z =	92.01 in <sup>3</sup>	Z =	92.01 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.1884	4.2475	26.2852	30.1012	0.0000	0.0000	30.1012
	Web	5.6628	4.2475	24.0527	0.1156	0.0000	0.0000	0.1156
2 (Left)	Horizontal Leg	1.7500	1.7500	3.0625	1.7865	2.4975	10.9156	12.7021
	Vertical Leg	3.0000	3.7500	11.2500	0.0625	0.4975	0.7425	0.8050
2 (Right)	Horizontal Leg	1.7500	6.7450	11.8038	1.7865	2.4975	10.9156	12.7021
	Vertical Leg	3.0000	4.7450	14.2350	0.0625	0.4975	0.7425	0.8050
3	Additional Plate	0.0000	4.2475	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>21.35</b>		<b>90.69</b>	<b>33.91</b>		<b>23.32</b>	<b>57.23</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.2475 in	S <sub>right</sub> =	13.47 in <sup>3</sup>	x-bar =	4.2475 in	S <sub>right</sub> =	13.47 in <sup>3</sup>
I <sub>y</sub> =	57.23 in <sup>4</sup>	S <sub>left</sub> =	13.47 in <sup>3</sup>	I <sub>y</sub> =	57.23 in <sup>4</sup>	S <sub>left</sub> =	13.47 in <sup>3</sup>
C <sub>right</sub> =	4.2475 in	A =	21.3512 in <sup>2</sup>	C <sub>right</sub> =	4.2475 in	A =	21.3512 in <sup>2</sup>
C <sub>left</sub> =	4.2475 in	r <sub>y</sub> =	1.6372 in	C <sub>left</sub> =	4.2475 in	r <sub>y</sub> =	1.6372 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	276.03 k-ft	276.03 k-ft
V	233.08 k	233.08 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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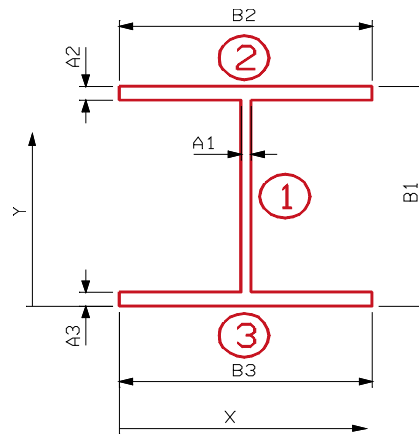
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 35.0313$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



Fascia Stringer F2-13 Avg

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	12.5742	17.5156	220.2453	1178.1464	0.0000	0.0000	1178.1464
2	Top Flange	6.0000	34.6563	207.9375	0.2813	17.1406	1762.8062	1763.0874
3	Bottom Flange	6.0000	0.3750	2.2500	0.2813	17.1406	1762.8062	1763.0874
<b>Total</b>		<b>24.57</b>		<b>430.43</b>	<b>1178.71</b>		<b>3525.61</b>	<b>4704.32</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	17.5156 in	$S_{top} =$	268.58 in <sup>3</sup>	y-bar =	17.5156 in	$S_{top} =$	268.58 in <sup>3</sup>
$I_x =$	4704.32 in <sup>4</sup>	$S_{bottom} =$	268.58 in <sup>3</sup>	$I_x =$	4704.32 in <sup>4</sup>	$S_{bottom} =$	268.58 in <sup>3</sup>
$C_{top} =$	17.5156 in	A =	24.5742 in <sup>2</sup>	$C_{top} =$	17.5156 in	A =	24.5742 in <sup>2</sup>
$C_{bottom} =$	17.5156 in	$r_x =$	13.8359 in	$C_{bottom} =$	17.5156 in	$r_x =$	13.8359 in
J =	2.8394 in <sup>4</sup>	Z =	311.09 in <sup>3</sup>			Z =	311.09 in <sup>3</sup>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	12.5742	4.0000	50.2969	0.1474	0.0000	0.0000	0.1474
2	Top Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>		<b>24.57</b>		<b>98.30</b>	<b>64.15</b>		<b>0.00</b>	<b>64.15</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 16.04 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 16.04 in <sup>3</sup>
I <sub>y</sub> =	64.15	in <sup>4</sup>	S <sub>left</sub> = 16.04 in <sup>3</sup>	I <sub>y</sub> =	64.15	in <sup>4</sup>	S <sub>left</sub> = 16.04 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 24.5742 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 24.5742 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.6157 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.6157 in

Non-composite Capacities*		
	AB	AI
M	933.28 k-ft	933.28 k-ft
V	205.24 k	205.24 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear





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Job No. P402110046  
Sheet No. \_\_\_\_\_

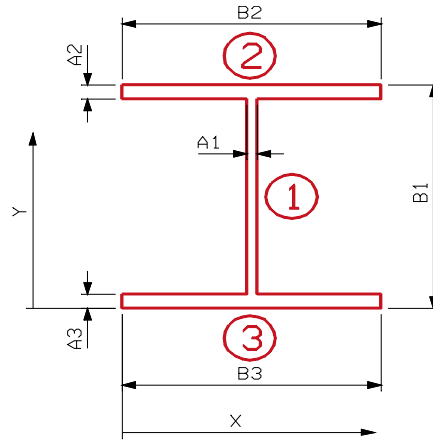
Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 17.0000$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.7500$  in

$d_o = 15.0000$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F2-13 @ FB E1**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		5.8125	8.5000	49.4063	116.3711	0.2487	0.3596	116.7307
2	Top Flange		6.0000	16.6250	99.7500	0.2813	8.3737	420.7156	420.9968
3	Bottom Flange		6.5625	0.3750	2.4609	0.3076	7.8763	407.1094	407.4170
<b>Total</b>			<b>18.38</b>		<b>151.62</b>	<b>116.96</b>		<b>828.18</b>	<b>945.14</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
y-bar =	8.2513	in	$S_{top} =$	108.03	in <sup>3</sup>	y-bar =	8.2513	in	$S_{top} =$	108.03	in <sup>3</sup>
$I_x =$	945.14	in <sup>4</sup>	$S_{bott.} =$	114.55	in <sup>3</sup>	$I_x =$	945.14	in <sup>4</sup>	$S_{bott.} =$	114.55	in <sup>3</sup>
$C_{top} =$	8.7487	in	A =	18.3750	in <sup>2</sup>	$C_{top} =$	8.7487	in	A =	18.3750	in <sup>2</sup>
$C_{bottom} =$	8.2513	in	$r_x =$	7.1719	in	$C_{bottom} =$	8.2513	in	$r_x =$	7.1719	in
J =	2.6279	in <sup>4</sup>	Z =	124.38	in <sup>3</sup>	Z =	124.38	in <sup>3</sup>			



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		5.8125	4.3750	25.4297	0.0681	0.0000	0.0000	0.0681
2	Top Flange		6.0000	4.3750	26.2500	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange		6.5625	4.3750	28.7109	41.8701	0.0000	0.0000	41.8701
<b>Total</b>			<b>18.38</b>		<b>80.39</b>	<b>73.94</b>		<b>0.00</b>	<b>73.94</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.3750	in	S <sub>right</sub> = 16.90 in <sup>3</sup>	x-bar =	4.3750	in	S <sub>right</sub> = 16.90 in <sup>3</sup>
I <sub>y</sub> =	73.94	in <sup>4</sup>	S <sub>left</sub> = 16.90 in <sup>3</sup>	I <sub>y</sub> =	73.94	in <sup>4</sup>	S <sub>left</sub> = 16.90 in <sup>3</sup>
C <sub>right</sub> =	4.3750	in	A = 18.3750 in <sup>2</sup>	C <sub>right</sub> =	4.3750	in	A = 18.3750 in <sup>2</sup>
C <sub>left</sub> =	4.3750	in	r <sub>y</sub> = 2.0060 in	C <sub>left</sub> =	4.3750	in	r <sub>y</sub> = 2.0060 in

Non-composite Capacities*		
	AB	AI
M	373.15 k-ft	373.15 k-ft
V	121.37 k	121.37 k

\*Compact Section

F <sub>y</sub> =	36.00 ksi
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AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/16/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

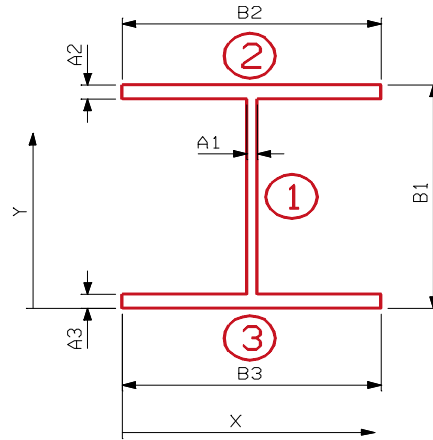
Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.7500$  in
- $B_1 = d = 14.3125$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 9.5000$  in
- $A_3 = t_f = 1.5000$  in
- $B_3 = b_f = 8.0000$  in

$d_o = n/a$  in

$d_o =$  stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F1-14 @ FB E1**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		9.0469	7.1563	64.7417	109.6963	1.0137	9.2970	118.9933
2	Top Flange		7.1250	13.9375	99.3047	0.3340	7.7950	432.9269	433.2609
3	Bottom Flange		12.0000	0.7500	9.0000	2.2500	5.3925	348.9516	351.2016
<b>Total</b>			<b>28.17</b>		<b>173.05</b>	<b>112.28</b>		<b>791.18</b>	<b>903.46</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	6.1425	in	$S_{top} = 110.58$	$in^3$	y-bar =	6.1425	in	$S_{top} = 110.58$	$in^3$		
$I_x =$	903.46	$in^4$	$S_{bott.} = 147.08$	$in^3$	$I_x =$	903.46	$in^4$	$S_{bott.} = 147.08$	$in^3$		
$C_{top} =$	8.1700	in	A =	28.1719	$in^2$	$C_{top} =$	8.1700	in	A =	28.1719	$in^2$
$C_{bottom} =$	6.1425	in	$r_x =$	5.6630	in	$C_{bottom} =$	6.1425	in	$r_x =$	5.6630	in
J =	12.0322	$in^4$	Z =	146.38	$in^3$	Z =	146.38	$in^3$			



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Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		9.0469	4.7500	42.9727	0.4241	0.0000	0.0000	0.4241
2	Top Flange		7.1250	4.7500	33.8438	53.5859	0.0000	0.0000	53.5859
3	Bottom Flange		12.0000	4.7500	57.0000	64.0000	0.0000	0.0000	64.0000
<b>Total</b>			<b>28.17</b>		<b>133.82</b>	<b>118.01</b>		<b>0.00</b>	<b>118.01</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.7500	in	S <sub>right</sub> = 24.84 in <sup>3</sup>	x-bar =	4.7500	in	S <sub>right</sub> = 24.84 in <sup>3</sup>
I <sub>y</sub> =	118.01	in <sup>4</sup>	S <sub>left</sub> = 24.84 in <sup>3</sup>	I <sub>y</sub> =	118.01	in <sup>4</sup>	S <sub>left</sub> = 24.84 in <sup>3</sup>
C <sub>right</sub> =	4.7500	in	A = 28.1719 in <sup>2</sup>	C <sub>right</sub> =	4.7500	in	A = 28.1719 in <sup>2</sup>
C <sub>left</sub> =	4.7500	in	r <sub>y</sub> = 2.0467 in	C <sub>left</sub> =	4.7500	in	r <sub>y</sub> = 2.0467 in

Non-composite Capacities*		
	AB	AI
M	439.14 k-ft	439.14 k-ft
V	188.90 k	188.90 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/26/2012

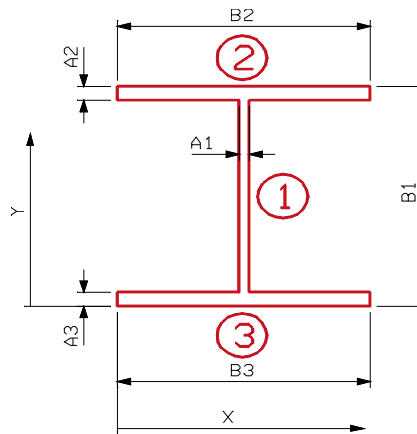
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 30.5000$  in
- $A_2 = t_f = 1.5000$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 1.5000$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



Fascia Stringer F1-14 Avg

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	10.3125	15.2500	157.2656	649.9023	0.0000	0.0000	649.9023
2	Top Flange	12.0000	29.7500	357.0000	2.2500	14.5000	2523.0000	2525.2500
3	Bottom Flange	12.0000	0.7500	9.0000	2.2500	14.5000	2523.0000	2525.2500
<b>Total</b>		<b>34.31</b>		<b>523.27</b>	<b>654.40</b>		<b>5046.00</b>	<b>5700.40</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	15.2500 in	$S_{top} =$	373.80 in <sup>3</sup>	y-bar =	15.2500 in	$S_{top} =$	373.80 in <sup>3</sup>
$I_x =$	5700.40 in <sup>4</sup>	$S_{bottom} =$	373.80 in <sup>3</sup>	$I_x =$	5700.40 in <sup>4</sup>	$S_{bottom} =$	373.80 in <sup>3</sup>
$C_{top} =$	15.2500 in	A =	34.3125 in <sup>2</sup>	$C_{top} =$	15.2500 in	A =	34.3125 in <sup>2</sup>
$C_{bottom} =$	15.2500 in	$r_x =$	12.8892 in	$C_{bottom} =$	15.2500 in	$r_x =$	12.8892 in
J =	18.4834 in <sup>4</sup>	Z =	418.90 in <sup>3</sup>	Z =	418.90 in <sup>3</sup>		



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Date 3/16/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	10.3125	4.0000	41.2500	0.1208	0.0000	0.0000	0.1208
2	Top Flange	12.0000	4.0000	48.0000	64.0000	0.0000	0.0000	64.0000
3	Bottom Flange	12.0000	4.0000	48.0000	64.0000	0.0000	0.0000	64.0000
<b>Total</b>		<b>34.31</b>		<b>137.25</b>	<b>128.12</b>		<b>0.00</b>	<b>128.12</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 32.03 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 32.03 in <sup>3</sup>
I <sub>y</sub> =	128.12	in <sup>4</sup>	S <sub>left</sub> = 32.03 in <sup>3</sup>	I <sub>y</sub> =	128.12	in <sup>4</sup>	S <sub>left</sub> = 32.03 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 34.3125 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 34.3125 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.9323 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.9323 in

Non-composite Capacities*		
	AB	AI
M	1256.70 k-ft	1256.70 k-ft
V	207.62 k	207.62 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W24x94	<b>Bottom Angles:</b>	
$A_1 = b_f =$	9.0700 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8750 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	8.7500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5150 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	9.1875 in
$B_3 = t =$	0.5150 in	$GAP =$	0.4375 in

\*select from dropdown list

Coped Stringer S1-14 @ FB E1

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	7.9363	8.7500	69.4422	0.5063	3.8151	115.5112	116.0175
	Web	4.0556	4.3750	17.7434	20.9593	0.5599	1.2715	22.2308
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	4.6849	76.8195	76.8924
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	1.9349	22.4633	40.4633
3	Additional Plate	0.0000	0.4375	0.0000	0.0000	4.4974	0.0000	0.0000
<b>Total</b>		<b>21.49</b>		<b>106.06</b>	<b>39.54</b>		<b>216.07</b>	<b>255.60</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	4.9349 in	S <sub>top</sub> =	60.11 in <sup>3</sup>	y-bar =	4.9349 in	S <sub>top</sub> =	60.11 in <sup>3</sup>
I <sub>x</sub> =	255.60 in <sup>4</sup>	S <sub>bott.</sub> =	51.80 in <sup>3</sup>	I <sub>x</sub> =	255.60 in <sup>4</sup>	S <sub>bott.</sub> =	51.80 in <sup>3</sup>
C <sub>top</sub> =	4.2526 in	A =	21.4919 in <sup>2</sup>	C <sub>top</sub> =	4.2526 in	A =	21.4919 in <sup>2</sup>
C <sub>bottom</sub> =	4.9349 in	r <sub>x</sub> =	3.4486 in	C <sub>bottom</sub> =	4.9349 in	r <sub>x</sub> =	3.4486 in
J =	3.1756 in <sup>4</sup>	Z =	67.56 in <sup>3</sup>			Z =	67.56 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		7.9363	4.2575	33.7886	54.4062	0.2775	0.6111	55.0174
	Web		4.0556	4.2575	17.2668	0.0896	0.2775	0.3123	0.4019
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.7850	13.5734	15.3599
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.7850	1.8487	1.9112
2 (Right)	Horizontal Leg		1.7500	6.7650	11.8388	1.7865	2.2300	8.7026	10.4890
	Vertical Leg		3.0000	4.7650	14.2950	0.0625	0.2300	0.1587	0.2212
3	Additional Plate		0.0000	4.2575	0.0000	0.0000	0.2775	0.0000	0.0000
<b>Total</b>			<b>21.49</b>		<b>91.50</b>	<b>58.19</b>		<b>25.21</b>	<b>83.40</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.5350 in	S <sub>right</sub> =	18.39 in <sup>3</sup>	x-bar =	4.5350 in	S <sub>right</sub> =	18.39 in <sup>3</sup>
I <sub>y</sub> =	83.40 in <sup>4</sup>	S <sub>left</sub> =	18.39 in <sup>3</sup>	I <sub>y</sub> =	83.40 in <sup>4</sup>	S <sub>left</sub> =	18.39 in <sup>3</sup>
C <sub>right</sub> =	4.5350 in	A =	21.4919 in <sup>2</sup>	C <sub>right</sub> =	4.5350 in	A =	21.4919 in <sup>2</sup>
C <sub>left</sub> =	4.5350 in	r <sub>y</sub> =	1.9699 in	C <sub>left</sub> =	4.5350 in	r <sub>y</sub> =	1.9699 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	202.68 k-ft	202.68 k-ft
V	199.52 k	199.52 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





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Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W24x94	<b>Bottom Angles:</b>
$A_1 = b_f =$	9.0700 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.8750 in	$B_2 = L_h =$ 4.0000 in
$C_1 = d =$	8.7500 in	$C_2 = t =$ 0.5000 in
$D_1 = t_w =$	0.5150 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	$H =$ 9.2500 in
$B_3 = t =$	0.5150 in	$Gap =$ 0.5000 in

\*select from dropdown list

Coped Stringer S1-14 @ FB E2

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	7.9363	8.8125	69.9382	0.5063	3.8427	117.1902	117.6965
	Web	4.0556	4.4375	17.9968	20.9593	0.5323	1.1491	22.1084
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	4.7198	77.9674	78.0403
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	1.9698	23.2804	41.2804
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	4.4698	0.0000	0.0000
<b>Total</b>		<b>21.49</b>		<b>106.81</b>	<b>39.54</b>		<b>219.59</b>	<b>259.13</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	4.9698 in	S <sub>top</sub> =	60.54 in <sup>3</sup>	y-bar =	4.9698 in	S <sub>top</sub> =	60.54 in <sup>3</sup>
I <sub>x</sub> =	259.13 in <sup>4</sup>	S <sub>bott.</sub> =	52.14 in <sup>3</sup>	I <sub>x</sub> =	259.13 in <sup>4</sup>	S <sub>bott.</sub> =	52.14 in <sup>3</sup>
C <sub>top</sub> =	4.2802 in	A =	21.4919 in <sup>2</sup>	C <sub>top</sub> =	4.2802 in	A =	21.4919 in <sup>2</sup>
C <sub>bottom</sub> =	4.9698 in	r <sub>x</sub> =	3.4723 in	C <sub>bottom</sub> =	4.9698 in	r <sub>x</sub> =	3.4723 in
J =	3.1756 in <sup>4</sup>	Z =	68.03 in <sup>3</sup>	Z =	68.03 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		7.9363	4.2575	33.7886	54.4062	0.2775	0.6111	55.0174
	Web		4.0556	4.2575	17.2668	0.0896	0.2775	0.3123	0.4019
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.7850	13.5734	15.3599
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.7850	1.8487	1.9112
2 (Right)	Horizontal Leg		1.7500	6.7650	11.8388	1.7865	2.2300	8.7026	10.4890
	Vertical Leg		3.0000	4.7650	14.2950	0.0625	0.2300	0.1587	0.2212
3	Additional Plate		0.0000	4.2575	0.0000	0.0000	0.2775	0.0000	0.0000
<b>Total</b>			<b>21.49</b>		<b>91.50</b>	<b>58.19</b>		<b>25.21</b>	<b>83.40</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.5350 in	S <sub>right</sub> =	18.39 in <sup>3</sup>	x-bar =	4.5350 in	S <sub>right</sub> =	18.39 in <sup>3</sup>
I <sub>y</sub> =	83.40 in <sup>4</sup>	S <sub>left</sub> =	18.39 in <sup>3</sup>	I <sub>y</sub> =	83.40 in <sup>4</sup>	S <sub>left</sub> =	18.39 in <sup>3</sup>
C <sub>right</sub> =	4.5350 in	A =	21.4919 in <sup>2</sup>	C <sub>right</sub> =	4.5350 in	A =	21.4919 in <sup>2</sup>
C <sub>left</sub> =	4.5350 in	r <sub>y</sub> =	1.9699 in	C <sub>left</sub> =	4.5350 in	r <sub>y</sub> =	1.9699 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	204.09 k-ft	204.09 k-ft
V	199.52 k	199.52 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W24x94	<b>Bottom Angles:</b>
$A_1 = b_f =$	9.0700 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.8750 in	$B_2 = L_h =$ 4.0000 in
$C_1 = d =$	8.6250 in	$C_2 = t =$ 0.5000 in
$D_1 = t_w =$	0.5150 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	$H =$ 9.1875 in
$B_3 = t =$	0.5150 in	$GAP =$ 0.5625 in

\*select from dropdown list

Coped Stringer S2-14 @ FB E1

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	7.9363	8.7500	69.4422	0.5063	3.8018	114.7058	115.2121
	Web	3.9913	4.4375	17.7112	19.9770	0.5107	1.0411	21.0182
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	4.6982	77.2570	77.3299
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	1.9482	22.7738	40.7738
3	Additional Plate	0.0000	0.5625	0.0000	0.0000	4.3857	0.0000	0.0000
<b>Total</b>		<b>21.43</b>		<b>106.03</b>	<b>38.56</b>		<b>215.78</b>	<b>254.33</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties					As-Inspected Section Properties						
y-bar =	4.9482	in	S <sub>top</sub> =	59.99	in <sup>3</sup>	y-bar =	4.9482	in	S <sub>top</sub> =	59.99	in <sup>3</sup>
I <sub>x</sub> =	254.33	in <sup>4</sup>	S <sub>bottom</sub> =	51.40	in <sup>3</sup>	I <sub>x</sub> =	254.33	in <sup>4</sup>	S <sub>bottom</sub> =	51.40	in <sup>3</sup>
C <sub>top</sub> =	4.2393	in	A =	21.4275	in <sup>2</sup>	C <sub>top</sub> =	4.2393	in	A =	21.4275	in <sup>2</sup>
C <sub>bottom</sub> =	4.9482	in	r <sub>x</sub> =	3.4452	in	C <sub>bottom</sub> =	4.9482	in	r <sub>x</sub> =	3.4452	in
J =	3.1699	in <sup>4</sup>	Z =	67.28	in <sup>3</sup>	Z =	67.28	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		7.9363	4.2575	33.7886	54.4062	0.2775	0.6111	55.0174
	Web		3.9913	4.2575	16.9927	0.0882	0.2775	0.3074	0.3956
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.7850	13.5734	15.3599
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.7850	1.8487	1.9112
2 (Right)	Horizontal Leg		1.7500	6.7650	11.8388	1.7865	2.2300	8.7026	10.4890
	Vertical Leg		3.0000	4.7650	14.2950	0.0625	0.2300	0.1587	0.2212
3	Additional Plate		0.0000	4.2575	0.0000	0.0000	0.2775	0.0000	0.0000
<b>Total</b>			<b>21.43</b>		<b>91.23</b>	<b>58.19</b>		<b>25.20</b>	<b>83.39</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	4.5350	in	S <sub>right</sub> =	18.39	in <sup>3</sup>	x-bar =	4.5350	in	S <sub>right</sub> =	18.39	in <sup>3</sup>
I <sub>y</sub> =	83.39	in <sup>4</sup>	S <sub>left</sub> =	18.39	in <sup>3</sup>	I <sub>y</sub> =	83.39	in <sup>4</sup>	S <sub>left</sub> =	18.39	in <sup>3</sup>
C <sub>right</sub> =	4.5350	in	A =	21.4275	in <sup>2</sup>	C <sub>right</sub> =	4.5350	in	A =	21.4275	in <sup>2</sup>
C <sub>left</sub> =	4.5350	in	r <sub>y</sub> =	1.9728	in	C <sub>left</sub> =	4.5350	in	r <sub>y</sub> =	1.9728	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	201.84 k-ft	201.84 k-ft
V	198.18 k	198.18 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W24x94	<b>Bottom Angles:</b>
$A_1 = b_f =$	9.0700 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.8750 in	$B_2 = L_h =$ 4.0000 in
$C_1 = d =$	9.2500 in	$C_2 = t =$ 0.5000 in
$D_1 = t_w =$	0.5150 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	$H =$ 9.7500 in
$B_3 = t =$	0.5150 in	$Gap =$ 0.5000 in

\*select from dropdown list

Coped Stringer S2-14 @ FB E2

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	7.9363	9.3125	73.9063	0.5063	4.1170	134.5163	135.0226
	Web	4.3131	4.6875	20.2178	25.2104	0.5080	1.1131	26.3235
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	4.9455	85.6033	85.6762
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	2.1955	28.9216	46.9216
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	4.6955	0.0000	0.0000
<b>Total</b>		<b>21.75</b>		<b>113.00</b>	<b>43.79</b>		<b>250.15</b>	<b>293.94</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	5.1955	in	S <sub>top</sub> =	64.54	in <sup>3</sup>	y-bar =	5.1955	in	S <sub>top</sub> =	64.54	in <sup>3</sup>
I <sub>x</sub> =	293.94	in <sup>4</sup>	S <sub>bottom</sub> =	56.58	in <sup>3</sup>	I <sub>x</sub> =	293.94	in <sup>4</sup>	S <sub>bottom</sub> =	56.58	in <sup>3</sup>
C <sub>top</sub> =	4.5545	in	A =	21.7494	in <sup>2</sup>	C <sub>top</sub> =	4.5545	in	A =	21.7494	in <sup>2</sup>
C <sub>bottom</sub> =	5.1955	in	r <sub>x</sub> =	3.6763	in	C <sub>bottom</sub> =	5.1955	in	r <sub>x</sub> =	3.6763	in
J =	3.1984	in <sup>4</sup>	Z =	72.93	in <sup>3</sup>	Z =	72.93	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	7.9363	4.2575	33.7886	54.4062	0.2775	0.6111	55.0174
	Web	4.3131	4.2575	18.3631	0.0953	0.2775	0.3321	0.4275
2 (Left)	Horizontal Leg	1.7500	1.7500	3.0625	1.7865	2.7850	13.5734	15.3599
	Vertical Leg	3.0000	3.7500	11.2500	0.0625	0.7850	1.8487	1.9112
2 (Right)	Horizontal Leg	1.7500	6.7650	11.8388	1.7865	2.2300	8.7026	10.4890
	Vertical Leg	3.0000	4.7650	14.2950	0.0625	0.2300	0.1587	0.2212
3	Additional Plate	0.0000	4.2575	0.0000	0.0000	0.2775	0.0000	0.0000
<b>Total</b>		<b>21.75</b>		<b>92.60</b>	<b>58.20</b>		<b>25.23</b>	<b>83.43</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	4.5350	in	S <sub>right</sub> =	18.40	in <sup>3</sup>	x-bar =	4.5350	in	S <sub>right</sub> =	18.40	in <sup>3</sup>
I <sub>y</sub> =	83.43	in <sup>4</sup>	S <sub>left</sub> =	18.40	in <sup>3</sup>	I <sub>y</sub> =	83.43	in <sup>4</sup>	S <sub>left</sub> =	18.40	in <sup>3</sup>
C <sub>right</sub> =	4.5350	in	A =	21.7494	in <sup>2</sup>	C <sub>right</sub> =	4.5350	in	A =	21.7494	in <sup>2</sup>
C <sub>left</sub> =	4.5350	in	r <sub>y</sub> =	1.9585	in	C <sub>left</sub> =	4.5350	in	r <sub>y</sub> =	1.9585	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	218.79 k-ft	218.79 k-ft
V	204.90 k	204.90 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W24x94	<b>Bottom Angles:</b>	
$A_1 = b_f =$	9.0700 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8750 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	9.1250 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5150 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	9.6250 in
$B_3 = t =$	0.5150 in	$Gap =$	0.5000 in

\*select from dropdown list

Coped Stringer S3-14 @ FB E1

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	7.9363	9.1875	72.9143	0.5063	4.0485	130.0763	130.5827
	Web	4.2488	4.6250	19.6505	24.0984	0.5140	1.1226	25.2210
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	4.8890	83.6590	83.7319
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	2.1390	27.4526	45.4526
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	4.6390	0.0000	0.0000
<b>Total</b>		<b>21.69</b>		<b>111.44</b>	<b>42.68</b>		<b>242.31</b>	<b>284.99</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	5.1390 in	S <sub>top</sub> =	63.53 in <sup>3</sup>	y-bar =	5.1390 in	S <sub>top</sub> =	63.53 in <sup>3</sup>
I <sub>x</sub> =	284.99 in <sup>4</sup>	S <sub>bottom</sub> =	55.46 in <sup>3</sup>	I <sub>x</sub> =	284.99 in <sup>4</sup>	S <sub>bottom</sub> =	55.46 in <sup>3</sup>
C <sub>top</sub> =	4.4860 in	A =	21.6850 in <sup>2</sup>	C <sub>top</sub> =	4.4860 in	A =	21.6850 in <sup>2</sup>
C <sub>bottom</sub> =	5.1390 in	r <sub>x</sub> =	3.6252 in	C <sub>bottom</sub> =	5.1390 in	r <sub>x</sub> =	3.6252 in
J =	3.1927 in <sup>4</sup>	Z =	71.69 in <sup>3</sup>			Z =	71.69 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	7.9363	4.2575	33.7886	54.4062	0.2775	0.6111	55.0174
	Web	4.2488	4.2575	18.0891	0.0939	0.2775	0.3272	0.4211
2 (Left)	Horizontal Leg	1.7500	1.7500	3.0625	1.7865	2.7850	13.5734	15.3599
	Vertical Leg	3.0000	3.7500	11.2500	0.0625	0.7850	1.8487	1.9112
2 (Right)	Horizontal Leg	1.7500	6.7650	11.8388	1.7865	2.2300	8.7026	10.4890
	Vertical Leg	3.0000	4.7650	14.2950	0.0625	0.2300	0.1587	0.2212
3	Additional Plate	0.0000	4.2575	0.0000	0.0000	0.2775	0.0000	0.0000
<b>Total</b>		<b>21.69</b>		<b>92.32</b>	<b>58.20</b>		<b>25.22</b>	<b>83.42</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.5350 in	S <sub>right</sub> =	18.39 in <sup>3</sup>	x-bar =	4.5350 in	S <sub>right</sub> =	18.39 in <sup>3</sup>
I <sub>y</sub> =	83.42 in <sup>4</sup>	S <sub>left</sub> =	18.39 in <sup>3</sup>	I <sub>y</sub> =	83.42 in <sup>4</sup>	S <sub>left</sub> =	18.39 in <sup>3</sup>
C <sub>right</sub> =	4.5350 in	A =	21.6850 in <sup>2</sup>	C <sub>right</sub> =	4.5350 in	A =	21.6850 in <sup>2</sup>
C <sub>left</sub> =	4.5350 in	r <sub>y</sub> =	1.9613 in	C <sub>left</sub> =	4.5350 in	r <sub>y</sub> =	1.9613 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	215.07 k-ft	215.07 k-ft
V	203.55 k	203.55 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W24x94	<b>Bottom Angles:</b>
$A_1 = b_f =$	9.0700 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.8750 in	$B_2 = L_h =$ 4.0000 in
$C_1 = d =$	11.7500 in	$C_2 = t =$ 0.5000 in
$D_1 = t_w =$	0.5150 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	$H =$ 12.3125 in
$B_3 = t =$	0.5150 in	$GAP =$ 0.5625 in

\*select from dropdown list

Coped Stringer S3-14 @ FB E2

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	7.9363	11.8750	94.2430	0.5063	5.5060	240.5962	241.1025
	Web	5.6006	6.0000	33.6038	55.1968	0.3690	0.7626	55.9593
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.1190	131.0473	131.1202
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.3690	68.1007	86.1007
3	Additional Plate	0.0000	0.5625	0.0000	0.0000	5.8065	0.0000	0.0000
<b>Total</b>		<b>23.04</b>		<b>146.72</b>	<b>73.78</b>		<b>440.51</b>	<b>514.28</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.3690 in	S <sub>top</sub> =	86.53 in <sup>3</sup>	y-bar =	6.3690 in	S <sub>top</sub> =	86.53 in <sup>3</sup>
I <sub>x</sub> =	514.28 in <sup>4</sup>	S <sub>bott.</sub> =	80.75 in <sup>3</sup>	I <sub>x</sub> =	514.28 in <sup>4</sup>	S <sub>bott.</sub> =	80.75 in <sup>3</sup>
C <sub>top</sub> =	5.9435 in	A =	23.0369 in <sup>2</sup>	C <sub>top</sub> =	5.9435 in	A =	23.0369 in <sup>2</sup>
C <sub>bottom</sub> =	6.3690 in	r <sub>x</sub> =	4.7249 in	C <sub>bottom</sub> =	6.3690 in	r <sub>x</sub> =	4.7249 in
J =	3.3122 in <sup>4</sup>	Z =	99.57 in <sup>3</sup>			Z =	99.57 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		7.9363	4.2575	33.7886	54.4062	0.2775	0.6111	55.0174
	Web		5.6006	4.2575	23.8447	0.1238	0.2775	0.4313	0.5551
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.7850	13.5734	15.3599
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.7850	1.8487	1.9112
2 (Right)	Horizontal Leg		1.7500	6.7650	11.8388	1.7865	2.2300	8.7026	10.4890
	Vertical Leg		3.0000	4.7650	14.2950	0.0625	0.2300	0.1587	0.2212
3	Additional Plate		0.0000	4.2575	0.0000	0.0000	0.2775	0.0000	0.0000
<b>Total</b>			<b>23.04</b>		<b>98.08</b>	<b>58.23</b>		<b>25.33</b>	<b>83.55</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.5350 in	S <sub>right</sub> =	18.42 in <sup>3</sup>	x-bar =	4.5350 in	S <sub>right</sub> =	18.42 in <sup>3</sup>
I <sub>y</sub> =	83.55 in <sup>4</sup>	S <sub>left</sub> =	18.42 in <sup>3</sup>	I <sub>y</sub> =	83.55 in <sup>4</sup>	S <sub>left</sub> =	18.42 in <sup>3</sup>
C <sub>right</sub> =	4.5350 in	A =	23.0369 in <sup>2</sup>	C <sub>right</sub> =	4.5350 in	A =	23.0369 in <sup>2</sup>
C <sub>left</sub> =	4.5350 in	r <sub>y</sub> =	1.9045 in	C <sub>left</sub> =	4.5350 in	r <sub>y</sub> =	1.9045 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	298.71 k-ft	298.71 k-ft
V	231.78 k	231.78 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



Made By CTG  
Checked By DMP

Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section*	W24x104	Bottom Angles:	
$A_1 = b_f =$	12.8000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7500 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	9.6250 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	10.1250 in
$B_3 = t =$	0.5000 in	Gap =	0.5000 in

\*select from dropdown list

Coped Stringer S4-14 @ FB E1

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6000	9.7500	93.6000	0.4500	4.0406	156.7334	157.1834
	Web	4.4375	4.9375	21.9102	29.1269	0.7719	2.6440	31.7709
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.4594	104.3179	104.3908
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	2.7094	44.0453	62.0453
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.2094	0.0000	0.0000
<b>Total</b>		<b>23.54</b>		<b>134.39</b>	<b>47.65</b>		<b>307.74</b>	<b>355.39</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



Made By CTG  
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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	5.7094 in	S <sub>top</sub> =	80.49 in <sup>3</sup>	y-bar =	5.7094 in	S <sub>top</sub> =	80.49 in <sup>3</sup>
I <sub>x</sub> =	355.39 in <sup>4</sup>	S <sub>bot.</sub> =	62.25 in <sup>3</sup>	I <sub>x</sub> =	355.39 in <sup>4</sup>	S <sub>bot.</sub> =	62.25 in <sup>3</sup>
C <sub>top</sub> =	4.4156 in	A =	23.5375 in <sup>2</sup>	C <sub>top</sub> =	4.4156 in	A =	23.5375 in <sup>2</sup>
C <sub>bottom</sub> =	5.7094 in	r <sub>x</sub> =	3.8857 in	C <sub>bottom</sub> =	5.7094 in	r <sub>x</sub> =	3.8857 in
J =	2.9615 in <sup>4</sup>	Z =	84.38 in <sup>3</sup>	Z =	84.38 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6000	4.2500	40.8000	131.0720	2.1500	44.3760	175.4480
	Web	4.4375	4.2500	18.8594	0.0924	2.1500	20.5123	20.6048
2 (Left)	Horizontal Leg	1.7500	1.7500	3.0625	1.7865	4.6500	37.8394	39.6258
	Vertical Leg	3.0000	3.7500	11.2500	0.0625	2.6500	21.0675	21.1300
2 (Right)	Horizontal Leg	1.7500	6.7500	11.8125	1.7865	0.3500	0.2144	2.0008
	Vertical Leg	3.0000	4.7500	14.2500	0.0625	1.6500	8.1675	8.2300
3	Additional Plate	0.0000	4.2500	0.0000	0.0000	2.1500	0.0000	0.0000
<b>Total</b>		<b>23.54</b>		<b>100.03</b>	<b>134.86</b>		<b>132.18</b>	<b>267.04</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.4000 in	S <sub>right</sub> =	41.72 in <sup>3</sup>	x-bar =	6.4000 in	S <sub>right</sub> =	41.72 in <sup>3</sup>
I <sub>y</sub> =	267.04 in <sup>4</sup>	S <sub>left</sub> =	41.72 in <sup>3</sup>	I <sub>y</sub> =	267.04 in <sup>4</sup>	S <sub>left</sub> =	41.72 in <sup>3</sup>
C <sub>right</sub> =	6.4000 in	A =	23.5375 in <sup>2</sup>	C <sub>right</sub> =	6.4000 in	A =	23.5375 in <sup>2</sup>
C <sub>left</sub> =	6.4000 in	r <sub>y</sub> =	3.3683 in	C <sub>left</sub> =	6.4000 in	r <sub>y</sub> =	3.3683 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	253.14 k-ft	253.14 k-ft
V	207.50 k	207.50 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section*	W24x104	Bottom Angles:	
$A_1 = b_f =$	12.8000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7500 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	12.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	12.8750 in
$B_3 = t =$	0.5000 in	Gap =	0.3750 in

\*select from dropdown list

Coped Stringer S4-14 @ FB E2

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6000	12.5000	120.0000	0.4500	5.4692	287.1586	287.6086
	Web	5.8750	6.2500	36.7188	67.5931	0.7808	3.5815	71.1746
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.7808	160.9265	160.9994
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.0308	97.4832	115.4832
3	Additional Plate	0.0000	0.3750	0.0000	0.0000	6.6558	0.0000	0.0000
<b>Total</b>		<b>24.98</b>		<b>175.59</b>	<b>86.12</b>		<b>549.15</b>	<b>635.27</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	7.0308	in	S <sub>top</sub> =	108.70	in <sup>3</sup>	y-bar =	7.0308	in	S <sub>top</sub> =	108.70	in <sup>3</sup>
I <sub>x</sub> =	635.27	in <sup>4</sup>	S <sub>bott.</sub> =	90.35	in <sup>3</sup>	I <sub>x</sub> =	635.27	in <sup>4</sup>	S <sub>bott.</sub> =	90.35	in <sup>3</sup>
C <sub>top</sub> =	5.8442	in	A =	24.9750	in <sup>2</sup>	C <sub>top</sub> =	5.8442	in	A =	24.9750	in <sup>2</sup>
C <sub>bottom</sub> =	7.0308	in	r <sub>x</sub> =	5.0434	in	C <sub>bottom</sub> =	7.0308	in	r <sub>x</sub> =	5.0434	in
J =	3.0813	in <sup>4</sup>	Z =	117.75	in <sup>3</sup>	Z =	117.75	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6000	4.2500	40.8000	131.0720	2.1500	44.3760	175.4480
	Web		5.8750	4.2500	24.9688	0.1224	2.1500	27.1572	27.2796
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.6500	37.8394	39.6258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.6500	21.0675	21.1300
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.3500	0.2144	2.0008
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.6500	8.1675	8.2300
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	2.1500	0.0000	0.0000
<b>Total</b>			<b>24.98</b>		<b>106.14</b>	<b>134.89</b>		<b>138.82</b>	<b>273.71</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	6.4000	in	S <sub>right</sub> =	42.77	in <sup>3</sup>	x-bar =	6.4000	in	S <sub>right</sub> =	42.77	in <sup>3</sup>
I <sub>y</sub> =	273.71	in <sup>4</sup>	S <sub>left</sub> =	42.77	in <sup>3</sup>	I <sub>y</sub> =	273.71	in <sup>4</sup>	S <sub>left</sub> =	42.77	in <sup>3</sup>
C <sub>right</sub> =	6.4000	in	A =	24.9750	in <sup>2</sup>	C <sub>right</sub> =	6.4000	in	A =	24.9750	in <sup>2</sup>
C <sub>left</sub> =	6.4000	in	r <sub>y</sub> =	3.3105	in	C <sub>left</sub> =	6.4000	in	r <sub>y</sub> =	3.3105	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	353.25 k-ft	353.25 k-ft
V	237.51 k	237.51 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W24x104	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.8000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7500 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	10.2500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	10.7500 in
$B_3 = t =$	0.5000 in	$Gap =$	0.5000 in

\*select from dropdown list

Coped Stringer S5-14 @ FB E1

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6000	10.3750	99.6000	0.4500	4.3619	182.6510	183.1010
	Web	4.7500	5.2500	24.9375	35.7240	0.7631	2.7660	38.4900
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.7631	116.2467	116.3197
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.0131	54.4727	72.4727
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.5131	0.0000	0.0000
<b>Total</b>		<b>23.85</b>		<b>143.41</b>	<b>54.25</b>		<b>356.14</b>	<b>410.38</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.0131 in	S <sub>top</sub> =	86.64 in <sup>3</sup>	y-bar =	6.0131 in	S <sub>top</sub> =	86.64 in <sup>3</sup>
I <sub>x</sub> =	410.38 in <sup>4</sup>	S <sub>bottom</sub> =	68.25 in <sup>3</sup>	I <sub>x</sub> =	410.38 in <sup>4</sup>	S <sub>bottom</sub> =	68.25 in <sup>3</sup>
C <sub>top</sub> =	4.7369 in	A =	23.8500 in <sup>2</sup>	C <sub>top</sub> =	4.7369 in	A =	23.8500 in <sup>2</sup>
C <sub>bottom</sub> =	6.0131 in	r <sub>x</sub> =	4.1481 in	C <sub>bottom</sub> =	6.0131 in	r <sub>x</sub> =	4.1481 in
J =	2.9875 in <sup>4</sup>	Z =	91.62 in <sup>3</sup>	Z =	91.62 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6000	4.2500	40.8000	131.0720	2.1500	44.3760	175.4480
	Web		4.7500	4.2500	20.1875	0.0990	2.1500	21.9569	22.0558
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.6500	37.8394	39.6258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.6500	21.0675	21.1300
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.3500	0.2144	2.0008
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.6500	8.1675	8.2300
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	2.1500	0.0000	0.0000
<b>Total</b>			<b>23.85</b>		<b>101.36</b>	<b>134.87</b>		<b>133.62</b>	<b>268.49</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.4000 in	S <sub>right</sub> =	41.95 in <sup>3</sup>	x-bar =	6.4000 in	S <sub>right</sub> =	41.95 in <sup>3</sup>
I <sub>y</sub> =	268.49 in <sup>4</sup>	S <sub>left</sub> =	41.95 in <sup>3</sup>	I <sub>y</sub> =	268.49 in <sup>4</sup>	S <sub>left</sub> =	41.95 in <sup>3</sup>
C <sub>right</sub> =	6.4000 in	A =	23.8500 in <sup>2</sup>	C <sub>right</sub> =	6.4000 in	A =	23.8500 in <sup>2</sup>
C <sub>left</sub> =	6.4000 in	r <sub>y</sub> =	3.3552 in	C <sub>left</sub> =	6.4000 in	r <sub>y</sub> =	3.3552 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	274.86 k-ft	274.86 k-ft
V	214.02 k	214.02 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





Made By CTG  
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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section*	W24x104	Bottom Angles:	
$A_1 = b_f =$	12.8000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7500 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	13.0000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	13.3750 in
$B_3 = t =$	0.5000 in	Gap =	0.3750 in

\*select from dropdown list

Coped Stringer S5-14 @ FB E2

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6000	13.0000	124.8000	0.4500	5.7260	314.7522	315.2022
	Web	6.1250	6.5000	39.8125	76.5944	0.7740	3.6697	80.2641
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	7.0240	172.6797	172.7526
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.2740	109.6042	127.6042
3	Additional Plate	0.0000	0.3750	0.0000	0.0000	6.8990	0.0000	0.0000
<b>Total</b>		<b>25.23</b>		<b>183.49</b>	<b>95.12</b>		<b>600.71</b>	<b>695.82</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	7.2740 in	S <sub>top</sub> =	114.05 in <sup>3</sup>	y-bar =	7.2740 in	S <sub>top</sub> =	114.05 in <sup>3</sup>
I <sub>x</sub> =	695.82 in <sup>4</sup>	S <sub>bott.</sub> =	95.66 in <sup>3</sup>	I <sub>x</sub> =	695.82 in <sup>4</sup>	S <sub>bott.</sub> =	95.66 in <sup>3</sup>
C <sub>top</sub> =	6.1010 in	A =	25.2250 in <sup>2</sup>	C <sub>top</sub> =	6.1010 in	A =	25.2250 in <sup>2</sup>
C <sub>bottom</sub> =	7.2740 in	r <sub>x</sub> =	5.2521 in	C <sub>bottom</sub> =	7.2740 in	r <sub>x</sub> =	5.2521 in
J =	3.1021 in <sup>4</sup>	Z =	124.03 in <sup>3</sup>	Z =	124.03 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6000	4.2500	40.8000	131.0720	2.1500	44.3760	175.4480
	Web		6.1250	4.2500	26.0313	0.1276	2.1500	28.3128	28.4404
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.6500	37.8394	39.6258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.6500	21.0675	21.1300
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.3500	0.2144	2.0008
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.6500	8.1675	8.2300
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	2.1500	0.0000	0.0000
<b>Total</b>			<b>25.23</b>		<b>107.21</b>	<b>134.90</b>		<b>139.98</b>	<b>274.88</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.4000 in	S <sub>right</sub> =	42.95 in <sup>3</sup>	x-bar =	6.4000 in	S <sub>right</sub> =	42.95 in <sup>3</sup>
I <sub>y</sub> =	274.88 in <sup>4</sup>	S <sub>left</sub> =	42.95 in <sup>3</sup>	I <sub>y</sub> =	274.88 in <sup>4</sup>	S <sub>left</sub> =	42.95 in <sup>3</sup>
C <sub>right</sub> =	6.4000 in	A =	25.2250 in <sup>2</sup>	C <sub>right</sub> =	6.4000 in	A =	25.2250 in <sup>2</sup>
C <sub>left</sub> =	6.4000 in	r <sub>y</sub> =	3.3010 in	C <sub>left</sub> =	6.4000 in	r <sub>y</sub> =	3.3010 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	372.09 k-ft	372.09 k-ft
V	242.73 k	242.73 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



Made By CTG  
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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W24x104	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.8000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7500 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	10.7500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	11.2500 in
$B_3 = t =$	0.5000 in	$Gap =$	0.5000 in

\*select from dropdown list

Coped Stringer S6-14 @ FB E1

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6000	10.8750	104.4000	0.4500	4.6188	204.7977	205.2477
	Web	5.0000	5.5000	27.5000	41.6667	0.7562	2.8594	44.5260
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.0062	126.2615	126.3345
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.2562	63.6180	81.6180
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.7562	0.0000	0.0000
<b>Total</b>		<b>24.10</b>		<b>150.78</b>	<b>60.19</b>		<b>397.54</b>	<b>457.73</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.2562 in	S <sub>top</sub> =	91.66 in <sup>3</sup>	y-bar =	6.2562 in	S <sub>top</sub> =	91.66 in <sup>3</sup>
I <sub>x</sub> =	457.73 in <sup>4</sup>	S <sub>bott.</sub> =	73.16 in <sup>3</sup>	I <sub>x</sub> =	457.73 in <sup>4</sup>	S <sub>bott.</sub> =	73.16 in <sup>3</sup>
C <sub>top</sub> =	4.9938 in	A =	24.1000 in <sup>2</sup>	C <sub>top</sub> =	4.9938 in	A =	24.1000 in <sup>2</sup>
C <sub>bottom</sub> =	6.2562 in	r <sub>x</sub> =	4.3581 in	C <sub>bottom</sub> =	6.2562 in	r <sub>x</sub> =	4.3581 in
J =	3.0083 in <sup>4</sup>	Z =	97.52 in <sup>3</sup>			Z =	97.52 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6000	4.2500	40.8000	131.0720	2.1500	44.3760	175.4480
	Web		5.0000	4.2500	21.2500	0.1042	2.1500	23.1125	23.2167
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.6500	37.8394	39.6258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.6500	21.0675	21.1300
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.3500	0.2144	2.0008
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.6500	8.1675	8.2300
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	2.1500	0.0000	0.0000
<b>Total</b>			<b>24.10</b>		<b>102.43</b>	<b>134.87</b>		<b>134.78</b>	<b>269.65</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.4000 in	S <sub>right</sub> =	42.13 in <sup>3</sup>	x-bar =	6.4000 in	S <sub>right</sub> =	42.13 in <sup>3</sup>
I <sub>y</sub> =	269.65 in <sup>4</sup>	S <sub>left</sub> =	42.13 in <sup>3</sup>	I <sub>y</sub> =	269.65 in <sup>4</sup>	S <sub>left</sub> =	42.13 in <sup>3</sup>
C <sub>right</sub> =	6.4000 in	A =	24.1000 in <sup>2</sup>	C <sub>right</sub> =	6.4000 in	A =	24.1000 in <sup>2</sup>
C <sub>left</sub> =	6.4000 in	r <sub>y</sub> =	3.3450 in	C <sub>left</sub> =	6.4000 in	r <sub>y</sub> =	3.3450 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	292.56 k-ft	292.56 k-ft
V	219.24 k	219.24 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



Made By CTG  
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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section*	W24x104	Bottom Angles:	
$A_1 = b_f =$	12.8000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7500 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	12.7500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	13.2500 in
$B_3 = t =$	0.5000 in	Gap =	0.5000 in

\*select from dropdown list

Coped Stringer S6-14 @ FB E2

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6000	12.8750	123.6000	0.4500	5.6449	305.9052	306.3552
	Web	6.0000	6.5000	39.0000	72.0000	0.7301	3.1981	75.1981
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.9801	170.5253	170.5982
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.2301	107.3614	125.3614
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.7301	0.0000	0.0000
<b>Total</b>		<b>25.10</b>		<b>181.48</b>	<b>90.52</b>		<b>586.99</b>	<b>677.51</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	7.2301 in	S <sub>top</sub> =	112.55 in <sup>3</sup>	y-bar =	7.2301 in	S <sub>top</sub> =	112.55 in <sup>3</sup>
I <sub>x</sub> =	677.51 in <sup>4</sup>	S <sub>bottom</sub> =	93.71 in <sup>3</sup>	I <sub>x</sub> =	677.51 in <sup>4</sup>	S <sub>bottom</sub> =	93.71 in <sup>3</sup>
C <sub>top</sub> =	6.0199 in	A =	25.1000 in <sup>2</sup>	C <sub>top</sub> =	6.0199 in	A =	25.1000 in <sup>2</sup>
C <sub>bottom</sub> =	7.2301 in	r <sub>x</sub> =	5.1954 in	C <sub>bottom</sub> =	7.2301 in	r <sub>x</sub> =	5.1954 in
J =	3.0917 in <sup>4</sup>	Z =	122.07 in <sup>3</sup>	Z =	122.07 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6000	4.2500	40.8000	131.0720	2.1500	44.3760	175.4480
	Web		6.0000	4.2500	25.5000	0.1250	2.1500	27.7350	27.8600
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.6500	37.8394	39.6258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.6500	21.0675	21.1300
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.3500	0.2144	2.0008
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.6500	8.1675	8.2300
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	2.1500	0.0000	0.0000
<b>Total</b>			<b>25.10</b>		<b>106.68</b>	<b>134.89</b>		<b>139.40</b>	<b>274.29</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.4000 in	S <sub>right</sub> =	42.86 in <sup>3</sup>	x-bar =	6.4000 in	S <sub>right</sub> =	42.86 in <sup>3</sup>
I <sub>y</sub> =	274.29 in <sup>4</sup>	S <sub>left</sub> =	42.86 in <sup>3</sup>	I <sub>y</sub> =	274.29 in <sup>4</sup>	S <sub>left</sub> =	42.86 in <sup>3</sup>
C <sub>right</sub> =	6.4000 in	A =	25.1000 in <sup>2</sup>	C <sub>right</sub> =	6.4000 in	A =	25.1000 in <sup>2</sup>
C <sub>left</sub> =	6.4000 in	r <sub>y</sub> =	3.3058 in	C <sub>left</sub> =	6.4000 in	r <sub>y</sub> =	3.3058 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	366.21 k-ft	366.21 k-ft
V	240.12 k	240.12 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



Made By CTG  
Checked By DMP

Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section*	W24x104	Bottom Angles:	
$A_1 = b_f =$	12.8000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7500 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	8.7500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	9.3125 in
$B_3 = t =$	0.5000 in	Gap =	0.5625 in

\*select from dropdown list

Coped Stringer S7-14 @ FB E1

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6000	8.9375	85.8000	0.4500	3.6161	125.5293	125.9793
	Web	4.0000	4.5625	18.2500	21.3333	0.7589	2.3039	23.6372
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.0714	90.0179	90.0908
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	2.3214	32.3342	50.3342
3	Additional Plate	0.0000	0.5625	0.0000	0.0000	4.7589	0.0000	0.0000
<b>Total</b>		<b>23.10</b>		<b>122.93</b>	<b>39.86</b>		<b>250.19</b>	<b>290.04</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	5.3214 in	S <sub>top</sub> =	72.67 in <sup>3</sup>	y-bar =	5.3214 in	S <sub>top</sub> =	72.67 in <sup>3</sup>
I <sub>x</sub> =	290.04 in <sup>4</sup>	S <sub>bott.</sub> =	54.50 in <sup>3</sup>	I <sub>x</sub> =	290.04 in <sup>4</sup>	S <sub>bott.</sub> =	54.50 in <sup>3</sup>
C <sub>top</sub> =	3.9911 in	A =	23.1000 in <sup>2</sup>	C <sub>top</sub> =	3.9911 in	A =	23.1000 in <sup>2</sup>
C <sub>bottom</sub> =	5.3214 in	r <sub>x</sub> =	3.5434 in	C <sub>bottom</sub> =	5.3214 in	r <sub>x</sub> =	3.5434 in
J =	2.9250 in <sup>4</sup>	Z =	75.06 in <sup>3</sup>	Z =	75.06 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6000	4.2500	40.8000	131.0720	2.1500	44.3760	175.4480
	Web		4.0000	4.2500	17.0000	0.0833	2.1500	18.4900	18.5733
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.6500	37.8394	39.6258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.6500	21.0675	21.1300
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.3500	0.2144	2.0008
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.6500	8.1675	8.2300
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	2.1500	0.0000	0.0000
<b>Total</b>			<b>23.10</b>		<b>98.18</b>	<b>134.85</b>		<b>130.15</b>	<b>265.01</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.4000 in	S <sub>right</sub> =	41.41 in <sup>3</sup>	x-bar =	6.4000 in	S <sub>right</sub> =	41.41 in <sup>3</sup>
I <sub>y</sub> =	265.01 in <sup>4</sup>	S <sub>left</sub> =	41.41 in <sup>3</sup>	I <sub>y</sub> =	265.01 in <sup>4</sup>	S <sub>left</sub> =	41.41 in <sup>3</sup>
C <sub>right</sub> =	6.4000 in	A =	23.1000 in <sup>2</sup>	C <sub>right</sub> =	6.4000 in	A =	23.1000 in <sup>2</sup>
C <sub>left</sub> =	6.4000 in	r <sub>y</sub> =	3.3871 in	C <sub>left</sub> =	6.4000 in	r <sub>y</sub> =	3.3871 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	225.18 k-ft	225.18 k-ft
V	198.36 k	198.36 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





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Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W24x104	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.8000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7500 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	13.1250 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	13.6250 in
$B_3 = t =$	0.5000 in	$Gap =$	0.5000 in

\*select from dropdown list

Coped Stringer S7-14 @ FB E2

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6000	13.2500	127.2000	0.4500	5.8371	327.0878	327.5378
	Web	6.1875	6.6875	41.3789	78.9631	0.7254	3.2560	82.2191
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	7.1629	179.5754	179.6483
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.4129	116.8425	134.8425
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.9129	0.0000	0.0000
<b>Total</b>		<b>25.29</b>		<b>187.45</b>	<b>97.49</b>		<b>626.76</b>	<b>724.25</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	7.4129	in	S <sub>top</sub> =	116.59	in <sup>3</sup>	y-bar =	7.4129	in	S <sub>top</sub> =	116.59	in <sup>3</sup>
I <sub>x</sub> =	724.25	in <sup>4</sup>	S <sub>bottom</sub> =	97.70	in <sup>3</sup>	I <sub>x</sub> =	724.25	in <sup>4</sup>	S <sub>bottom</sub> =	97.70	in <sup>3</sup>
C <sub>top</sub> =	6.2121	in	A =	25.2875	in <sup>2</sup>	C <sub>top</sub> =	6.2121	in	A =	25.2875	in <sup>2</sup>
C <sub>bottom</sub> =	7.4129	in	r <sub>x</sub> =	5.3517	in	C <sub>bottom</sub> =	7.4129	in	r <sub>x</sub> =	5.3517	in
J =	3.1073	in <sup>4</sup>	Z =	126.79	in <sup>3</sup>	Z =	126.79	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6000	4.2500	40.8000	131.0720	2.1500	44.3760	175.4480
	Web		6.1875	4.2500	26.2969	0.1289	2.1500	28.6017	28.7306
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.6500	37.8394	39.6258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.6500	21.0675	21.1300
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.3500	0.2144	2.0008
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.6500	8.1675	8.2300
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	2.1500	0.0000	0.0000
<b>Total</b>			<b>25.29</b>		<b>107.47</b>	<b>134.90</b>		<b>140.27</b>	<b>275.17</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	6.4000	in	S <sub>right</sub> =	42.99	in <sup>3</sup>	x-bar =	6.4000	in	S <sub>right</sub> =	42.99	in <sup>3</sup>
I <sub>y</sub> =	275.17	in <sup>4</sup>	S <sub>left</sub> =	42.99	in <sup>3</sup>	I <sub>y</sub> =	275.17	in <sup>4</sup>	S <sub>left</sub> =	42.99	in <sup>3</sup>
C <sub>right</sub> =	6.4000	in	A =	25.2875	in <sup>2</sup>	C <sub>right</sub> =	6.4000	in	A =	25.2875	in <sup>2</sup>
C <sub>left</sub> =	6.4000	in	r <sub>y</sub> =	3.2987	in	C <sub>left</sub> =	6.4000	in	r <sub>y</sub> =	3.2987	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	380.37 k-ft	380.37 k-ft
V	244.04 k	244.04 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/16/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

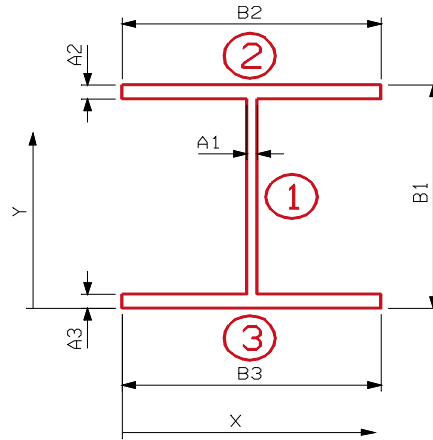
Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 18.1875$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.8750$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in

$d_o = n/a$  in

$d_o =$  stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F2-14 @ FB E1**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		6.2578	9.0938	56.9070	145.2191	0.3025	0.5727	145.7918
2	Top Flange		6.6563	17.8125	118.5645	0.3120	8.4162	471.4829	471.7949
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	9.0213	488.2987	488.5800
<b>Total</b>			<b>18.91</b>		<b>177.72</b>	<b>145.81</b>		<b>960.35</b>	<b>1106.17</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	9.3963	in	$S_{top} = 125.83$	$in^3$	y-bar =	9.3963	in	$S_{top} = 125.83$	$in^3$		
$I_x =$	1106.17	$in^4$	$S_{bott.} = 117.72$	$in^3$	$I_x =$	1106.17	$in^4$	$S_{bott.} = 117.72$	$in^3$		
$C_{top} =$	8.7912	in	A =	18.9141	$in^2$	$C_{top} =$	8.7912	in	A =	18.9141	$in^2$
$C_{bottom} =$	9.3963	in	$r_x =$	7.6475	in	$C_{bottom} =$	9.3963	in	$r_x =$	7.6475	in
J =	2.6664	$in^4$	Z =	136.17	$in^3$	Z =	136.17	$in^3$			



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Date 3/16/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		6.2578	4.4375	27.7690	0.0733	0.0000	0.0000	0.0733
2	Top Flange		6.6563	4.4375	29.5371	43.6903	0.0000	0.0000	43.6903
3	Bottom Flange		6.0000	4.4375	26.6250	32.0000	0.0000	0.0000	32.0000
<b>Total</b>			<b>18.91</b>		<b>83.93</b>	<b>75.76</b>		<b>0.00</b>	<b>75.76</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	4.4375	in	S <sub>right</sub> =	17.07	in <sup>3</sup>	x-bar =	4.4375	in	S <sub>right</sub> =	17.07	in <sup>3</sup>
I <sub>y</sub> =	75.76	in <sup>4</sup>	S <sub>left</sub> =	17.07	in <sup>3</sup>	I <sub>y</sub> =	75.76	in <sup>4</sup>	S <sub>left</sub> =	17.07	in <sup>3</sup>
C <sub>right</sub> =	4.4375	in	A =	18.9141	in <sup>2</sup>	C <sub>right</sub> =	4.4375	in	A =	18.9141	in <sup>2</sup>
C <sub>left</sub> =	4.4375	in	r <sub>y</sub> =	2.0014	in	C <sub>left</sub> =	4.4375	in	r <sub>y</sub> =	2.0014	in

Non-composite Capacities*		
	AB	AI
M	408.50 k-ft	408.50 k-ft
V	130.66 k	130.66 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/16/2012  
Date 3/26/2012

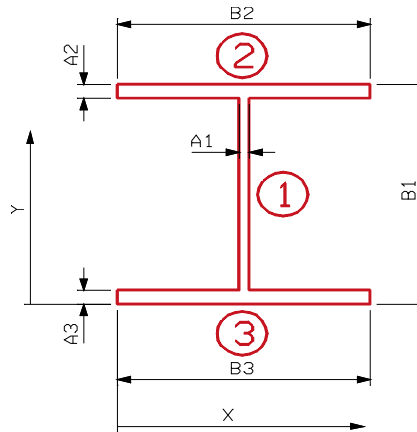
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 37.0313$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



Fascia Stringer F2-14 Avg

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	13.3242	18.5156	246.7062	1401.7852	0.0000	0.0000	1401.7852
2	Top Flange	6.0000	36.6563	219.9375	0.2813	18.1406	1974.4937	1974.7749
3	Bottom Flange	6.0000	0.3750	2.2500	0.2813	18.1406	1974.4937	1974.7749
<b>Total</b>		<b>25.32</b>		<b>468.89</b>	<b>1402.35</b>		<b>3948.99</b>	<b>5351.34</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	18.5156	in	$S_{top} = 289.02$	in <sup>3</sup>	y-bar =	18.5156	in	$S_{top} = 289.02$	in <sup>3</sup>		
$I_x =$	5351.34	n <sup>4</sup>	$S_{bott.} = 289.02$	in <sup>3</sup>	$I_x =$	5351.34	n <sup>4</sup>	$S_{bott.} = 289.02$	in <sup>3</sup>		
$C_{top} =$	18.5156	in	A =	25.3242	in <sup>2</sup>	$C_{top} =$	18.5156	in	A =	25.3242	in <sup>2</sup>
$C_{bottom} =$	18.5156	in	$r_x =$	14.5366	in	$C_{bottom} =$	18.5156	in	$r_x =$	14.5366	in
J =	2.8746	in <sup>4</sup>	Z =	336.04	in <sup>3</sup>	Z =	336.04	in <sup>3</sup>			



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	13.3242	4.0000	53.2969	0.1561	0.0000	0.0000	0.1561
2	Top Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>		<b>25.32</b>		<b>101.30</b>	<b>64.16</b>		<b>0.00</b>	<b>64.16</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 16.04 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 16.04 in <sup>3</sup>
I <sub>y</sub> =	64.16	in <sup>4</sup>	S <sub>left</sub> = 16.04 in <sup>3</sup>	I <sub>y</sub> =	64.16	in <sup>4</sup>	S <sub>left</sub> = 16.04 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 25.3242 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 25.3242 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.5917 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.5917 in

Non-composite Capacities*		
	AB	AI
M	1008.13 k-ft	1008.13 k-ft
V	193.68 k	193.68 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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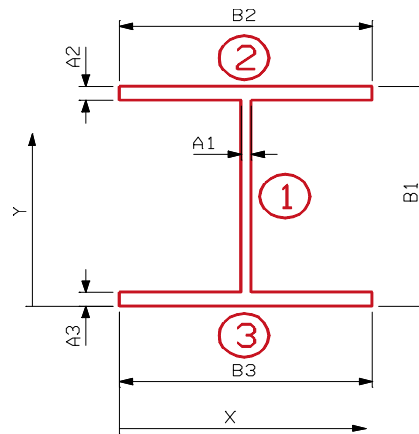
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 32.0000$  in
- $A_2 = t_f = 1.5000$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 1.5000$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



Fascia Stringer F1A-15 Avg

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		10.8750	16.0000	174.0000	762.1563	0.0000	0.0000	762.1563
2	Top Flange		12.0000	31.2500	375.0000	2.2500	15.2500	2790.7500	2793.0000
3	Bottom Flange		12.0000	0.7500	9.0000	2.2500	15.2500	2790.7500	2793.0000
<b>Total</b>			<b>34.88</b>		<b>558.00</b>	<b>766.66</b>		<b>5581.50</b>	<b>6348.16</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	16.0000	in	$S_{top} = 396.76$	in <sup>3</sup>	y-bar =	16.0000	in	$S_{top} = 396.76$	in <sup>3</sup>		
$I_x =$	6348.16	in <sup>4</sup>	$S_{bottom} = 396.76$	in <sup>3</sup>	$I_x =$	6348.16	in <sup>4</sup>	$S_{bottom} = 396.76$	in <sup>3</sup>		
$C_{top} =$	16.0000	in	A =	34.8750	in <sup>2</sup>	$C_{top} =$	16.0000	in	A =	34.8750	in <sup>2</sup>
$C_{bottom} =$	16.0000	in	$r_x =$	13.4917	in	$C_{bottom} =$	16.0000	in	$r_x =$	13.4917	in
J =	18.5098	in <sup>4</sup>	Z =	444.84	in <sup>3</sup>	J =	18.5098	in <sup>4</sup>	Z =	444.84	in <sup>3</sup>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		10.8750	4.0000	43.5000	0.1274	0.0000	0.0000	0.1274
2	Top Flange		12.0000	4.0000	48.0000	64.0000	0.0000	0.0000	64.0000
3	Bottom Flange		12.0000	4.0000	48.0000	64.0000	0.0000	0.0000	64.0000
<b>Total</b>			<b>34.88</b>		<b>139.50</b>	<b>128.13</b>		<b>0.00</b>	<b>128.13</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	4.0000	in	S <sub>right</sub> =	32.03	in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> =	32.03	in <sup>3</sup>
I <sub>y</sub> =	128.13	in <sup>4</sup>	S <sub>left</sub> =	32.03	in <sup>3</sup>	I <sub>y</sub> =	128.13	in <sup>4</sup>	S <sub>left</sub> =	32.03	in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A =	34.8750	in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A =	34.8750	in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> =	1.9167	in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> =	1.9167	in

Non-composite Capacities*		
	AB	AI
M	1334.53 k-ft	1334.53 k-ft
V	207.62 k	207.62 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear





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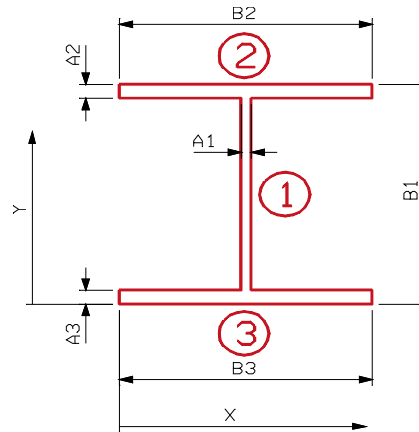
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 33.5000$  in
- $A_2 = t_f = 1.5000$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 1.5000$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F1B-15 Avg**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	11.4375	16.7500	191.5781	886.6445	0.0000	0.0000	886.6445
2	Top Flange	12.0000	32.7500	393.0000	2.2500	16.0000	3072.0000	3074.2500
3	Bottom Flange	12.0000	0.7500	9.0000	2.2500	16.0000	3072.0000	3074.2500
<b>Total</b>		<b>35.44</b>		<b>593.58</b>	<b>891.14</b>		<b>6144.00</b>	<b>7035.14</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	16.7500 in	$S_{top} =$	420.01 in <sup>3</sup>	y-bar =	16.7500 in	$S_{top} =$	420.01 in <sup>3</sup>
$I_x =$	7035.14 in <sup>4</sup>	$S_{bottom} =$	420.01 in <sup>3</sup>	$I_x =$	7035.14 in <sup>4</sup>	$S_{bottom} =$	420.01 in <sup>3</sup>
$C_{top} =$	16.7500 in	A =	35.4375 in <sup>2</sup>	$C_{top} =$	16.7500 in	A =	35.4375 in <sup>2</sup>
$C_{bottom} =$	16.7500 in	$r_x =$	14.0898 in	$C_{bottom} =$	16.7500 in	$r_x =$	14.0898 in
J =	18.5361 in <sup>4</sup>	Z =	471.21 in <sup>3</sup>			Z =	471.21 in <sup>3</sup>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	11.4375	4.0000	45.7500	0.1340	0.0000	0.0000	0.1340
2	Top Flange	12.0000	4.0000	48.0000	64.0000	0.0000	0.0000	64.0000
3	Bottom Flange	12.0000	4.0000	48.0000	64.0000	0.0000	0.0000	64.0000
<b>Total</b>		<b>35.44</b>		<b>141.75</b>	<b>128.13</b>		<b>0.00</b>	<b>128.13</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 32.03 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 32.03 in <sup>3</sup>
I <sub>y</sub> =	128.13	in <sup>4</sup>	S <sub>left</sub> = 32.03 in <sup>3</sup>	I <sub>y</sub> =	128.13	in <sup>4</sup>	S <sub>left</sub> = 32.03 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 35.4375 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 35.4375 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.9015 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.9015 in

Non-composite Capacities*		
	AB	AI
M	1413.63 k-ft	1413.63 k-ft
V	207.62 k	207.62 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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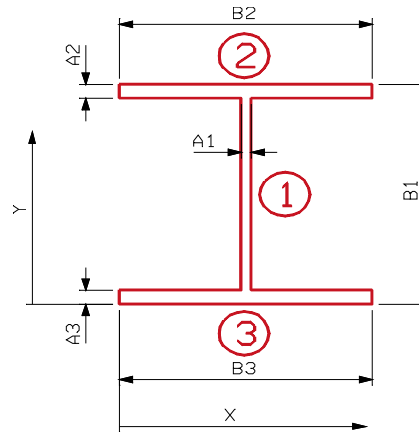
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 35.0000$  in
- $A_2 = t_f = 1.5000$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 1.5000$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



Fascia Stringer F1C-15 Avg

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		12.0000	17.5000	210.0000	1024.0000	0.0000	0.0000	1024.0000
2	Top Flange		12.0000	34.2500	411.0000	2.2500	16.7500	3366.7500	3369.0000
3	Bottom Flange		12.0000	0.7500	9.0000	2.2500	16.7500	3366.7500	3369.0000
<b>Total</b>			<b>36.00</b>		<b>630.00</b>	<b>1028.50</b>		<b>6733.50</b>	<b>7762.00</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	17.5000	in	$S_{top} = 443.54$ in <sup>3</sup>	y-bar =	17.5000	in	$S_{top} = 443.54$ in <sup>3</sup>
$I_x =$	7762.00	in <sup>4</sup>	$S_{bottom} = 443.54$ in <sup>3</sup>	$I_x =$	7762.00	in <sup>4</sup>	$S_{bottom} = 443.54$ in <sup>3</sup>
$C_{top} =$	17.5000	in	$A = 36.0000$ in <sup>2</sup>	$C_{top} =$	17.5000	in	$A = 36.0000$ in <sup>2</sup>
$C_{bottom} =$	17.5000	in	$r_x = 14.6837$ in	$C_{bottom} =$	17.5000	in	$r_x = 14.6837$ in
$J =$	18.5625	in <sup>4</sup>	$Z = 498.00$ in <sup>3</sup>	$Z =$	498.00	in <sup>3</sup>	



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Date 3/16/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	12.0000	4.0000	48.0000	0.1406	0.0000	0.0000	0.1406
2	Top Flange	12.0000	4.0000	48.0000	64.0000	0.0000	0.0000	64.0000
3	Bottom Flange	12.0000	4.0000	48.0000	64.0000	0.0000	0.0000	64.0000
<b>Total</b>		<b>36.00</b>		<b>144.00</b>	<b>128.14</b>		<b>0.00</b>	<b>128.14</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 32.04 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 32.04 in <sup>3</sup>
I <sub>y</sub> =	128.14	in <sup>4</sup>	S <sub>left</sub> = 32.04 in <sup>3</sup>	I <sub>y</sub> =	128.14	in <sup>4</sup>	S <sub>left</sub> = 32.04 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 36.0000 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 36.0000 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.8867 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.8867 in

Non-composite Capacities*		
	AB	AI
M	1494.00 k-ft	1494.00 k-ft
V	207.62 k	207.62 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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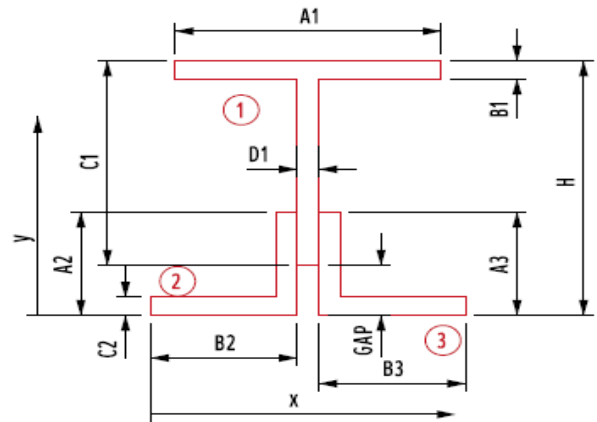
Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W21x111	Left Angle:	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8750 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	8.7500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5500 in	Right Angle:	
		$A_3 = L_v =$	6.0000 in
		$B_3 = L_h =$	6.0000 in
		$C_3 = t =$	0.5000 in
		Miscellaneous:	
		H =	9.2500 in
		Gap =	0.5000 in



**Coped Stringer S1-15 @ FB E2**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		10.7625	8.8125	94.8445	0.6867	3.6085	140.1427	140.8294
	Web		4.3313	4.4375	19.2199	22.3838	0.7665	2.5446	24.9284
2	Horizontal Legs		1.7500	0.2500	0.4375	0.0365	4.9540	42.9484	42.9849
	Vertical Legs		3.0000	3.0000	9.0000	9.0000	2.2040	14.5726	23.5726
3	Horizontal Legs		2.7500	0.2500	0.6875	0.0573	4.9540	67.4904	67.5477
	Vertical Legs		3.0000	3.0000	9.0000	9.0000	2.2040	14.5726	23.5726
<b>Total</b>			<b>25.59</b>		<b>133.19</b>	<b>41.16</b>		<b>282.27</b>	<b>323.44</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	5.2040 in	S <sub>top</sub> =	79.94 in <sup>3</sup>	y-bar =	5.2040 in	S <sub>top</sub> =	79.94 in <sup>3</sup>
I <sub>x</sub> =	323.44 in <sup>4</sup>	S <sub>bottom</sub> =	62.15 in <sup>3</sup>	I <sub>x</sub> =	323.44 in <sup>4</sup>	S <sub>bottom</sub> =	62.15 in <sup>3</sup>
C <sub>top</sub> =	4.0460 in	A =	25.5938 in <sup>2</sup>	C <sub>top</sub> =	4.0460 in	A =	25.5938 in <sup>2</sup>
C <sub>bottom</sub> =	5.2040 in	r <sub>x</sub> =	3.5549 in	C <sub>bottom</sub> =	5.2040 in	r <sub>x</sub> =	3.5549 in
J =	4.0584 in <sup>4</sup>	Z =	83.67 in <sup>3</sup>			Z =	83.67 in <sup>3</sup>



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		10.7625	4.2750	46.0097	135.6882	0.2061	0.4572	136.1454
	Web		4.3313	4.2750	18.5161	0.1092	0.2061	0.1840	0.2932
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.7311	13.0531	14.8396
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.7311	1.6035	1.6660
3 (Right)	Horizontal Leg		2.7500	7.8000	21.4500	6.9323	3.3189	30.2914	37.2237
	Vertical Leg		3.0000	4.8000	14.4000	0.0625	0.3189	0.3051	0.3676
<b>Total</b>			<b>25.59</b>		<b>114.69</b>	<b>144.64</b>		<b>45.89</b>	<b>190.54</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	4.4811	in	S <sub>right</sub> =	32.06	in <sup>3</sup>	x-bar =	4.4811	in	S <sub>right</sub> =	32.06	in <sup>3</sup>
I <sub>y</sub> =	190.54	in <sup>4</sup>	S <sub>left</sub> =	29.98	in <sup>3</sup>	I <sub>y</sub> =	190.54	in <sup>4</sup>	S <sub>left</sub> =	29.98	in <sup>3</sup>
C <sub>right</sub> =	5.9439	in	A =	25.5938	in <sup>2</sup>	C <sub>right</sub> =	5.9439	in	A =	25.5938	in <sup>2</sup>
C <sub>left</sub> =	6.3561	in	r <sub>y</sub> =	2.7285	in	C <sub>left</sub> =	6.3561	in	r <sub>y</sub> =	2.7285	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	251.01 k-ft	251.01 k-ft
V	205.28 k	205.28 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section*	W21x111	Bottom Angles:	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8750 in	$B_2 = L_h =$	6.0000 in
$C_1 = d =$	10.7500 in	$C_2 = t =$	0.6250 in
$D_1 = t_w =$	0.5500 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	11.2500 in
$B_3 = t =$	0.5500 in	Gap =	0.5000 in

\*select from dropdown list

Coped Stringer S1-15 @ FB E3

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	10.7625	10.8125	116.3695	0.6867	5.2062	291.7125	292.3992
	Web	5.4313	5.4375	29.5324	44.1360	0.1688	0.1548	44.2907
2	Horizontal Legs	6.7188	0.3125	2.0996	0.2187	5.2938	188.2883	188.5070
	Vertical Legs	7.5000	3.0000	22.5000	22.5000	2.6063	50.9460	73.4460
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.1063	0.0000	0.0000
<b>Total</b>		<b>30.41</b>		<b>170.50</b>	<b>67.54</b>		<b>531.10</b>	<b>598.64</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	5.6063	in	S <sub>top</sub> =	106.07	in <sup>3</sup>	y-bar =	5.6063	in	S <sub>top</sub> =	106.07	in <sup>3</sup>
I <sub>x</sub> =	598.64	in <sup>4</sup>	S <sub>bott.</sub> =	106.78	in <sup>3</sup>	I <sub>x</sub> =	598.64	in <sup>4</sup>	S <sub>bott.</sub> =	106.78	in <sup>3</sup>
C <sub>top</sub> =	5.6437	in	A =	30.4125	in <sup>2</sup>	C <sub>top</sub> =	5.6437	in	A =	30.4125	in <sup>2</sup>
C <sub>bottom</sub> =	5.6063	in	r <sub>x</sub> =	4.4367	in	C <sub>bottom</sub> =	5.6063	in	r <sub>x</sub> =	4.4367	in
J =	5.1457	in <sup>4</sup>	Z =	123.78	in <sup>3</sup>	Z =	123.78	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		10.7625	6.2750	67.5347	135.6882	0.0000	0.0000	135.6882
	Web		5.4313	6.2750	34.0811	0.1369	0.0000	0.0000	0.1369
2 (Left)	Horizontal Leg		3.3594	2.6875	9.0283	8.0879	3.5875	43.2357	51.3236
	Vertical Leg		3.7500	5.6875	21.3281	0.1221	0.5875	1.2943	1.4164
2 (Right)	Horizontal Leg		3.3594	9.8625	33.1318	8.0879	3.5875	43.2357	51.3236
	Vertical Leg		3.7500	6.8625	25.7344	0.1221	0.5875	1.2943	1.4164
3	Additional Plate		0.0000	6.2750	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>30.41</b>		<b>190.84</b>	<b>152.25</b>		<b>89.06</b>	<b>241.31</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	6.2750	in	S <sub>right</sub> =	38.45	in <sup>3</sup>	x-bar =	6.2750	in	S <sub>right</sub> =	38.45	in <sup>3</sup>
I <sub>y</sub> =	241.31	n <sup>4</sup>	S <sub>left</sub> =	38.45	in <sup>3</sup>	I <sub>y</sub> =	241.31	n <sup>4</sup>	S <sub>left</sub> =	38.45	in <sup>3</sup>
C <sub>right</sub> =	6.2750	in	A =	30.4125	in <sup>2</sup>	C <sub>right</sub> =	6.2750	in	A =	30.4125	in <sup>2</sup>
C <sub>left</sub> =	6.2750	in	r <sub>y</sub> =	2.8168	in	C <sub>left</sub> =	6.2750	in	r <sub>y</sub> =	2.8168	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	371.34 k-ft	371.34 k-ft
V	253.69 k	253.69 k

F <sub>y</sub> =	36.00 ksi
------------------	-----------

\*Compact Section





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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x111	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8750 in	$B_2 = L_h =$	6.0000 in
$C_1 = d =$	12.0000 in	$C_2 = t =$	0.6250 in
$D_1 = t_w =$	0.5500 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	12.5000 in
$B_3 = t =$	0.5500 in	$GAP =$	0.5000 in

\*select from dropdown list

Coped Stringer S1-15 @ FB E4

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	10.7625	12.0625	129.8227	0.6867	5.9044	375.2005	375.8872
	Web	6.1188	6.0625	37.0949	63.1076	0.0956	0.0559	63.1635
2	Horizontal Legs	6.7188	0.3125	2.0996	0.2187	5.8456	229.5874	229.8061
	Vertical Legs	7.5000	3.0000	22.5000	22.5000	3.1581	74.8024	97.3024
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.6581	0.0000	0.0000
<b>Total</b>		<b>31.10</b>		<b>191.52</b>	<b>86.51</b>		<b>679.65</b>	<b>766.16</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.1581 in	S <sub>top</sub> =	120.81 in <sup>3</sup>	y-bar =	6.1581 in	S <sub>top</sub> =	120.81 in <sup>3</sup>
I <sub>x</sub> =	766.16 in <sup>4</sup>	S <sub>bottom</sub> =	124.41 in <sup>3</sup>	I <sub>x</sub> =	766.16 in <sup>4</sup>	S <sub>bottom</sub> =	124.41 in <sup>3</sup>
C <sub>top</sub> =	6.3419 in	A =	31.1000 in <sup>2</sup>	C <sub>top</sub> =	6.3419 in	A =	31.1000 in <sup>2</sup>
C <sub>bottom</sub> =	6.1581 in	r <sub>x</sub> =	4.9634 in	C <sub>bottom</sub> =	6.1581 in	r <sub>x</sub> =	4.9634 in
J =	5.2151 in <sup>4</sup>	Z =	141.39 in <sup>3</sup>	Z =	141.39 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		10.7625	6.2750	67.5347	135.6882	0.0000	0.0000	135.6882
	Web		6.1188	6.2750	38.3952	0.1542	0.0000	0.0000	0.1542
2 (Left)	Horizontal Leg		3.3594	2.6875	9.0283	8.0879	3.5875	43.2357	51.3236
	Vertical Leg		3.7500	5.6875	21.3281	0.1221	0.5875	1.2943	1.4164
2 (Right)	Horizontal Leg		3.3594	9.8625	33.1318	8.0879	3.5875	43.2357	51.3236
	Vertical Leg		3.7500	6.8625	25.7344	0.1221	0.5875	1.2943	1.4164
3	Additional Plate		0.0000	6.2750	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>31.10</b>		<b>195.15</b>	<b>152.26</b>		<b>89.06</b>	<b>241.32</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.2750 in	S <sub>right</sub> =	38.46 in <sup>3</sup>	x-bar =	6.2750 in	S <sub>right</sub> =	38.46 in <sup>3</sup>
I <sub>y</sub> =	241.32 in <sup>4</sup>	S <sub>left</sub> =	38.46 in <sup>3</sup>	I <sub>y</sub> =	241.32 in <sup>4</sup>	S <sub>left</sub> =	38.46 in <sup>3</sup>
C <sub>right</sub> =	6.2750 in	A =	31.1000 in <sup>2</sup>	C <sub>right</sub> =	6.2750 in	A =	31.1000 in <sup>2</sup>
C <sub>left</sub> =	6.2750 in	r <sub>y</sub> =	2.7856 in	C <sub>left</sub> =	6.2750 in	r <sub>y</sub> =	2.7856 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	424.17 k-ft	424.17 k-ft
V	268.05 k	268.05 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



Made By CTG  
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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section*	W21x111	Bottom Angles:	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8750 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	14.7500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5500 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	15.1250 in
$B_3 = t =$	0.5500 in	Gap =	0.3750 in

\*select from dropdown list

Coped Stringer S1-15 @ FB E5

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	10.7625	14.6875	158.0742	0.6867	6.3432	433.0473	433.7339
	Web	7.6313	7.3125	55.8035	122.4279	1.0318	8.1237	130.5516
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	8.0943	229.3097	229.3826
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	5.3443	171.3668	189.3668
3	Additional Plate	0.0000	0.3750	0.0000	0.0000	7.9693	0.0000	0.0000
<b>Total</b>		<b>27.89</b>		<b>232.75</b>	<b>141.19</b>		<b>841.85</b>	<b>983.03</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	8.3443 in	S <sub>top</sub> =	144.97 in <sup>3</sup>	y-bar =	8.3443 in	S <sub>top</sub> =	144.97 in <sup>3</sup>
I <sub>x</sub> =	983.03 in <sup>4</sup>	S <sub>bottom</sub> =	117.81 in <sup>3</sup>	I <sub>x</sub> =	983.03 in <sup>4</sup>	S <sub>bottom</sub> =	117.81 in <sup>3</sup>
C <sub>top</sub> =	6.7807 in	A =	27.8938 in <sup>2</sup>	C <sub>top</sub> =	6.7807 in	A =	27.8938 in <sup>2</sup>
C <sub>bottom</sub> =	8.3443 in	r <sub>x</sub> =	5.9365 in	C <sub>bottom</sub> =	8.3443 in	r <sub>x</sub> =	5.9365 in
J =	4.3078 in <sup>4</sup>	Z =	155.71 in <sup>3</sup>			Z =	155.71 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		10.7625	4.2750	46.0097	135.6882	1.8750	37.8369	173.5251
	Web		7.6313	4.2750	32.6236	0.1924	1.8750	26.8286	27.0210
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.4000	33.8800	35.6665
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.4000	17.2800	17.3425
2 (Right)	Horizontal Leg		1.7500	6.8000	11.9000	1.7865	0.6500	0.7394	2.5258
	Vertical Leg		3.0000	4.8000	14.4000	0.0625	1.3500	5.4675	5.5300
3	Additional Plate		0.0000	4.2750	0.0000	0.0000	1.8750	0.0000	0.0000
<b>Total</b>			<b>27.89</b>		<b>119.25</b>	<b>139.58</b>		<b>122.03</b>	<b>261.61</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.1500 in	S <sub>right</sub> =	42.54 in <sup>3</sup>	x-bar =	6.1500 in	S <sub>right</sub> =	42.54 in <sup>3</sup>
I <sub>y</sub> =	261.61 in <sup>4</sup>	S <sub>left</sub> =	42.54 in <sup>3</sup>	I <sub>y</sub> =	261.61 in <sup>4</sup>	S <sub>left</sub> =	42.54 in <sup>3</sup>
C <sub>right</sub> =	6.1500 in	A =	27.8938 in <sup>2</sup>	C <sub>right</sub> =	6.1500 in	A =	27.8938 in <sup>2</sup>
C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.0625 in	C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.0625 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	467.13 k-ft	467.13 k-ft
V	274.18 k	274.18 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



Made By CTG  
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Date 3/15/2012  
 Date 3/27/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

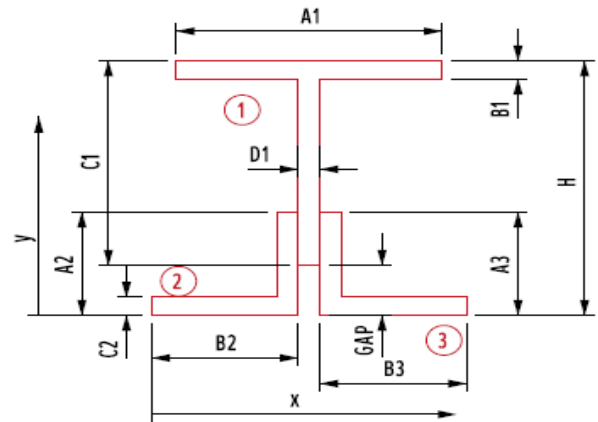
Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section W21x111 Left Angle:  
 $A_1 = b_f = 12.3000$  in  $A_2 = L_v = 6.0000$  in  
 $B_1 = t_f = 0.8750$  in  $B_2 = L_h = 4.0000$  in  
 $C_1 = d = 9.2500$  in  $C_2 = t = 0.5000$  in  
 $D_1 = t_w = 0.5500$  in

Right Angle:  
 $A_3 = L_v = 6.0000$  in  
 $B_3 = L_h = 6.0000$  in  
 $C_3 = t = 0.5000$  in

Miscellaneous:  
 $H = 9.7500$  in  
 Gap = 0.5000 in



**Coped Stringer S2-15 @ FB E2**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	10.7625	9.3125	100.2258	0.6867	3.8641	160.7001	161.3868
	Web	4.6063	4.6875	21.5918	26.9238	0.7609	2.6667	29.5905
2	Horizontal Legs	1.7500	0.2500	0.4375	0.0365	5.1984	47.2904	47.3268
	Vertical Legs	3.0000	3.0000	9.0000	9.0000	2.4484	17.9836	26.9836
3	Horizontal Legs	2.7500	0.2500	0.6875	0.0573	5.1984	74.3135	74.3707
	Vertical Legs	3.0000	3.0000	9.0000	9.0000	2.4484	17.9836	26.9836
<b>Total</b>		<b>25.87</b>		<b>140.94</b>	<b>45.70</b>		<b>320.94</b>	<b>366.64</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	5.4484	in	S <sub>top</sub> = 85.23 in <sup>3</sup>	y-bar =	5.4484	in	S <sub>top</sub> = 85.23 in <sup>3</sup>
I <sub>x</sub> =	366.64	in <sup>4</sup>	S <sub>bottom</sub> = 67.29 in <sup>3</sup>	I <sub>x</sub> =	366.64	in <sup>4</sup>	S <sub>bottom</sub> = 67.29 in <sup>3</sup>
C <sub>top</sub> =	4.3016	in	A = 25.8688 in <sup>2</sup>	C <sub>top</sub> =	4.3016	in	A = 25.8688 in <sup>2</sup>
C <sub>bottom</sub> =	5.4484	in	r <sub>x</sub> = 3.7647 in	C <sub>bottom</sub> =	5.4484	in	r <sub>x</sub> = 3.7647 in
J =	4.0861	in <sup>4</sup>	Z = 89.89 in <sup>3</sup>				Z = <b>89.89</b> in <sup>3</sup>



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		10.7625	4.2750	46.0097	135.6882	0.2039	0.4475	136.1357
	Web		4.6063	4.2750	19.6917	0.1161	0.2039	0.1915	0.3076
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.7289	13.0322	14.8187
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.7289	1.5939	1.6564
3 (Right)	Horizontal Leg		2.7500	7.8000	21.4500	6.9323	3.3211	30.3314	37.2637
	Vertical Leg		3.0000	4.8000	14.4000	0.0625	0.3211	0.3093	0.3718
<b>Total</b>			<b>25.87</b>		<b>115.86</b>	<b>144.65</b>		<b>45.91</b>	<b>190.55</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	4.4789	in	S <sub>right</sub> =	32.05	in <sup>3</sup>	x-bar =	4.4789	in	S <sub>right</sub> =	32.05	in <sup>3</sup>
I <sub>y</sub> =	190.55	in <sup>4</sup>	S <sub>left</sub> =	29.99	in <sup>3</sup>	I <sub>y</sub> =	190.55	in <sup>4</sup>	S <sub>left</sub> =	29.99	in <sup>3</sup>
C <sub>right</sub> =	5.9461	in	A =	25.8688	in <sup>2</sup>	C <sub>right</sub> =	5.9461	in	A =	25.8688	in <sup>2</sup>
C <sub>left</sub> =	6.3539	in	r <sub>y</sub> =	2.7141	in	C <sub>left</sub> =	6.3539	in	r <sub>y</sub> =	2.7141	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	269.67 k-ft	269.67 k-ft
V	211.02 k	211.02 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section*	W21x111	Bottom Angles:
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$ 8.0000 in
$B_1 = t_f =$	0.8750 in	$B_2 = L_h =$ 6.0000 in
$C_1 = d =$	11.3750 in	$C_2 = t =$ 0.7500 in
$D_1 = t_w =$	0.5500 in	



Additional Plate:	Miscellaneous:
$A_3 = d =$ 0.0000 in	H = 11.8750 in
$B_3 = t =$ 0.5500 in	Gap = 0.5000 in

\*select from dropdown list

Coped Stringer S2-15 @ FB E3

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	10.7625	11.4375	123.0961	0.6867	5.7456	355.2936	355.9803
	Web	5.7750	5.7500	33.2063	53.0578	0.0581	0.0195	53.0773
2	Horizontal Legs	7.8750	0.3750	2.9531	0.3691	5.3169	222.6198	222.9889
	Vertical Legs	12.0000	4.0000	48.0000	64.0000	1.6919	34.3494	98.3494
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.1919	0.0000	0.0000
<b>Total</b>		<b>36.41</b>		<b>207.26</b>	<b>118.11</b>		<b>612.28</b>	<b>730.40</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	5.6919	in	S <sub>top</sub> =	118.13	in <sup>3</sup>	y-bar =	5.6919	in	S <sub>top</sub> =	118.13	in <sup>3</sup>
I <sub>x</sub> =	730.40	in <sup>4</sup>	S <sub>bottom</sub> =	128.32	in <sup>3</sup>	I <sub>x</sub> =	730.40	in <sup>4</sup>	S <sub>bottom</sub> =	128.32	in <sup>3</sup>
C <sub>top</sub> =	6.1831	in	A =	36.4125	in <sup>2</sup>	C <sub>top</sub> =	6.1831	in	A =	36.4125	in <sup>2</sup>
C <sub>bottom</sub> =	5.6919	in	r <sub>x</sub> =	4.4787	in	C <sub>bottom</sub> =	5.6919	in	r <sub>x</sub> =	4.4787	in
J =	7.0556	in <sup>4</sup>	Z =	146.61	in <sup>3</sup>	Z =	146.61	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		10.7625	6.2750	67.5347	135.6882	0.0000	0.0000	135.6882
	Web		5.7750	6.2750	36.2381	0.1456	0.0000	0.0000	0.1456
2 (Left)	Horizontal Leg		3.9375	2.6250	10.3359	9.0439	3.6500	52.4573	61.5013
	Vertical Leg		6.0000	5.6250	33.7500	0.2813	0.6500	2.5350	2.8163
2 (Right)	Horizontal Leg		3.9375	9.9250	39.0797	9.0439	3.6500	52.4573	61.5013
	Vertical Leg		6.0000	6.9250	41.5500	0.2813	0.6500	2.5350	2.8163
3	Additional Plate		0.0000	6.2750	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>36.41</b>		<b>228.49</b>	<b>154.48</b>		<b>109.98</b>	<b>264.47</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	6.2750	in	S <sub>right</sub> =	42.15	in <sup>3</sup>	x-bar =	6.2750	in	S <sub>right</sub> =	42.15	in <sup>3</sup>
I <sub>y</sub> =	264.47	in <sup>4</sup>	S <sub>left</sub> =	42.15	in <sup>3</sup>	I <sub>y</sub> =	264.47	in <sup>4</sup>	S <sub>left</sub> =	42.15	in <sup>3</sup>
C <sub>right</sub> =	6.2750	in	A =	36.4125	in <sup>2</sup>	C <sub>right</sub> =	6.2750	in	A =	36.4125	in <sup>2</sup>
C <sub>left</sub> =	6.2750	in	r <sub>y</sub> =	2.6950	in	C <sub>left</sub> =	6.2750	in	r <sub>y</sub> =	2.6950	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	439.83 k-ft	439.83 k-ft
V	347.65 k	347.65 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section*	W21x111	Bottom Angles:
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$ 8.0000 in
$B_1 = t_f =$	0.8750 in	$B_2 = L_h =$ 6.0000 in
$C_1 = d =$	12.5000 in	$C_2 = t =$ 0.7500 in
$D_1 = t_w =$	0.5500 in	



Additional Plate:	Miscellaneous:
$A_3 = d =$ 0.0000 in	H = 13.0000 in
$B_3 = t =$ 0.5500 in	Gap = 0.5000 in

\*select from dropdown list

Coped Stringer S2-15 @ FB E4

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	10.7625	12.5625	135.2039	0.6867	6.4456	447.1320	447.8187
	Web	6.3938	6.3125	40.3605	72.0046	0.1956	0.2445	72.2492
2	Horizontal Legs	7.8750	0.3750	2.9531	0.3691	5.7419	259.6369	260.0060
	Vertical Legs	12.0000	4.0000	48.0000	64.0000	2.1169	53.7767	117.7767
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.6169	0.0000	0.0000
<b>Total</b>		<b>37.03</b>		<b>226.52</b>	<b>137.06</b>		<b>760.79</b>	<b>897.85</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.1169 in	S <sub>top</sub> =	130.44 in <sup>3</sup>	y-bar =	6.1169 in	S <sub>top</sub> =	130.44 in <sup>3</sup>
I <sub>x</sub> =	897.85 in <sup>4</sup>	S <sub>bottom</sub> =	146.78 in <sup>3</sup>	I <sub>x</sub> =	897.85 in <sup>4</sup>	S <sub>bottom</sub> =	146.78 in <sup>3</sup>
C <sub>top</sub> =	6.8831 in	A =	37.0313 in <sup>2</sup>	C <sub>top</sub> =	6.8831 in	A =	37.0313 in <sup>2</sup>
C <sub>bottom</sub> =	6.1169 in	r <sub>x</sub> =	4.9240 in	C <sub>bottom</sub> =	6.1169 in	r <sub>x</sub> =	4.9240 in
J =	7.1179 in <sup>4</sup>	Z =	162.63 in <sup>3</sup>			Z =	162.63 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		10.7625	6.2750	67.5347	135.6882	0.0000	0.0000	135.6882
	Web		6.3938	6.2750	40.1208	0.1612	0.0000	0.0000	0.1612
2 (Left)	Horizontal Leg		3.9375	2.6250	10.3359	9.0439	3.6500	52.4573	61.5013
	Vertical Leg		6.0000	5.6250	33.7500	0.2813	0.6500	2.5350	2.8163
2 (Right)	Horizontal Leg		3.9375	9.9250	39.0797	9.0439	3.6500	52.4573	61.5013
	Vertical Leg		6.0000	6.9250	41.5500	0.2813	0.6500	2.5350	2.8163
3	Additional Plate		0.0000	6.2750	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>37.03</b>		<b>232.37</b>	<b>154.50</b>		<b>109.98</b>	<b>264.48</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.2750 in	S <sub>right</sub> =	42.15 in <sup>3</sup>	x-bar =	6.2750 in	S <sub>right</sub> =	42.15 in <sup>3</sup>
I <sub>y</sub> =	264.48 in <sup>4</sup>	S <sub>left</sub> =	42.15 in <sup>3</sup>	I <sub>y</sub> =	264.48 in <sup>4</sup>	S <sub>left</sub> =	42.15 in <sup>3</sup>
C <sub>right</sub> =	6.2750 in	A =	37.0313 in <sup>2</sup>	C <sub>right</sub> =	6.2750 in	A =	37.0313 in <sup>2</sup>
C <sub>left</sub> =	6.2750 in	r <sub>y</sub> =	2.6725 in	C <sub>left</sub> =	6.2750 in	r <sub>y</sub> =	2.6725 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	487.89 k-ft	487.89 k-ft
V	360.57 k	360.57 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



Made By CTG  
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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section*	W21x111	Bottom Angles:	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8750 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	15.2500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5500 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	15.7500 in
$B_3 = t =$	0.5500 in	Gap =	0.5000 in

\*select from dropdown list

Coped Stringer S2-15 @ FB E5

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	10.7625	15.3125	164.8008	0.6867	6.6343	473.6948	474.3814
	Web	7.9063	7.6875	60.7793	136.1460	0.9907	7.7605	143.9065
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	8.4282	248.6231	248.6960
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	5.6782	193.4542	211.4542
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	8.1782	0.0000	0.0000
<b>Total</b>		<b>28.17</b>		<b>244.46</b>	<b>154.91</b>		<b>923.53</b>	<b>1078.44</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	8.6782	in	S <sub>top</sub> =	152.50	in <sup>3</sup>	y-bar =	8.6782	in	S <sub>top</sub> =	152.50	in <sup>3</sup>
I <sub>x</sub> =	1078.44	in <sup>4</sup>	S <sub>bottom</sub> =	124.27	in <sup>3</sup>	I <sub>x</sub> =	1078.44	in <sup>4</sup>	S <sub>bottom</sub> =	124.27	in <sup>3</sup>
C <sub>top</sub> =	7.0718	in	A =	28.1688	in <sup>2</sup>	C <sub>top</sub> =	7.0718	in	A =	28.1688	in <sup>2</sup>
C <sub>bottom</sub> =	8.6782	in	r <sub>x</sub> =	6.1875	in	C <sub>bottom</sub> =	8.6782	in	r <sub>x</sub> =	6.1875	in
J =	4.3356	in <sup>4</sup>	Z =	163.91	in <sup>3</sup>	Z =	163.91	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	10.7625	4.2750	46.0097	135.6882	1.8750	37.8369	173.5251
	Web	7.9063	4.2750	33.7992	0.1993	1.8750	27.7954	27.9947
2 (Left)	Horizontal Leg	1.7500	1.7500	3.0625	1.7865	4.4000	33.8800	35.6665
	Vertical Leg	3.0000	3.7500	11.2500	0.0625	2.4000	17.2800	17.3425
2 (Right)	Horizontal Leg	1.7500	6.8000	11.9000	1.7865	0.6500	0.7394	2.5258
	Vertical Leg	3.0000	4.8000	14.4000	0.0625	1.3500	5.4675	5.5300
3	Additional Plate	0.0000	4.2750	0.0000	0.0000	1.8750	0.0000	0.0000
<b>Total</b>		<b>28.17</b>		<b>120.42</b>	<b>139.59</b>		<b>123.00</b>	<b>262.58</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	6.1500	in	S <sub>right</sub> =	42.70	in <sup>3</sup>	x-bar =	6.1500	in	S <sub>right</sub> =	42.70	in <sup>3</sup>
I <sub>y</sub> =	262.58	in <sup>4</sup>	S <sub>left</sub> =	42.70	in <sup>3</sup>	I <sub>y</sub> =	262.58	in <sup>4</sup>	S <sub>left</sub> =	42.70	in <sup>3</sup>
C <sub>right</sub> =	6.1500	in	A =	28.1688	in <sup>2</sup>	C <sub>right</sub> =	6.1500	in	A =	28.1688	in <sup>2</sup>
C <sub>left</sub> =	6.1500	in	r <sub>y</sub> =	3.0532	in	C <sub>left</sub> =	6.1500	in	r <sub>y</sub> =	3.0532	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	491.73 k-ft	491.73 k-ft
V	279.92 k	279.92 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<u>Partial W-Section*</u>	W21x101	<u>Bottom Angles:</u>	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	6.0000 in
$C_1 = d =$	12.0000 in	$C_2 = t =$	0.6250 in
$D_1 = t_w =$	0.5000 in		



<u>Additional Plate:</u>		<u>Miscellaneous:</u>	
$A_3 = d =$	0.0000 in	$H =$	12.3125 in
$B_3 = t =$	0.5000 in	$Gap =$	0.3125 in

\*select from dropdown list

Coped Stringer S3-15 @ FB E2

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	11.9125	117.2190	0.5248	6.0145	355.9490	356.4738
	Web	5.6000	5.9125	33.1100	58.5387	0.0145	0.0012	58.5398
2	Horizontal Legs	6.7188	0.3125	2.0996	0.2187	5.5855	209.6136	209.8323
	Vertical Legs	7.5000	3.0000	22.5000	22.5000	2.8980	62.9899	85.4899
3	Additional Plate	0.0000	0.3125	0.0000	0.0000	5.5855	0.0000	0.0000
<b>Total</b>		<b>29.66</b>		<b>174.93</b>	<b>81.78</b>		<b>628.55</b>	<b>710.34</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	5.8980 in	S <sub>top</sub> =	110.74 in <sup>3</sup>	y-bar =	5.8980 in	S <sub>top</sub> =	110.74 in <sup>3</sup>
I <sub>x</sub> =	710.34 in <sup>4</sup>	S <sub>bott.</sub> =	120.44 in <sup>3</sup>	I <sub>x</sub> =	710.34 in <sup>4</sup>	S <sub>bott.</sub> =	120.44 in <sup>3</sup>
C <sub>top</sub> =	6.4145 in	A =	29.6588 in <sup>2</sup>	C <sub>top</sub> =	6.4145 in	A =	29.6588 in <sup>2</sup>
C <sub>bottom</sub> =	5.8980 in	r <sub>x</sub> =	4.8939 in	C <sub>bottom</sub> =	5.8980 in	r <sub>x</sub> =	4.8939 in
J =	4.4173 in <sup>4</sup>	Z =	131.73 in <sup>3</sup>	Z =	131.73 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	6.2500	61.5000	124.0578	0.0000	0.0000	124.0578
	Web		5.6000	6.2500	35.0000	0.1167	0.0000	0.0000	0.1167
2 (Left)	Horizontal Leg		3.3594	2.6875	9.0283	8.0879	3.5625	42.6352	50.7231
	Vertical Leg		3.7500	5.6875	21.3281	0.1221	0.5625	1.1865	1.3086
2 (Right)	Horizontal Leg		3.3594	9.8125	32.9639	8.0879	3.5625	42.6352	50.7231
	Vertical Leg		3.7500	6.8125	25.5469	0.1221	0.5625	1.1865	1.3086
3	Additional Plate		0.0000	6.2500	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>29.66</b>		<b>185.37</b>	<b>140.59</b>		<b>87.64</b>	<b>228.24</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.2500 in	S <sub>right</sub> =	36.52 in <sup>3</sup>	x-bar =	6.2500 in	S <sub>right</sub> =	36.52 in <sup>3</sup>
I <sub>y</sub> =	228.24 in <sup>4</sup>	S <sub>left</sub> =	36.52 in <sup>3</sup>	I <sub>y</sub> =	228.24 in <sup>4</sup>	S <sub>left</sub> =	36.52 in <sup>3</sup>
C <sub>right</sub> =	6.2500 in	A =	29.6588 in <sup>2</sup>	C <sub>right</sub> =	6.2500 in	A =	29.6588 in <sup>2</sup>
C <sub>left</sub> =	6.2500 in	r <sub>y</sub> =	2.7741 in	C <sub>left</sub> =	6.2500 in	r <sub>y</sub> =	2.7741 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	395.19 k-ft	395.19 k-ft
V	257.22 k	257.22 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section*	W21x101	Bottom Angles:
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$ 6.0000 in
$C_1 = d =$	13.2500 in	$C_2 = t =$ 0.6250 in
$D_1 = t_w =$	0.5000 in	



Additional Plate:	Miscellaneous:
$A_3 = d =$ 0.0000 in	H = 13.7500 in
$B_3 = t =$ 0.5000 in	GAP = 0.5000 in

\*select from dropdown list

Coped Stringer S3-15 @ FB E3

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	13.3500	131.3640	0.5248	6.8176	457.3548	457.8796
	Web	6.2250	6.7250	41.8631	80.4075	0.1926	0.2308	80.6384
2	Horizontal Legs	6.7188	0.3125	2.0996	0.2187	6.2199	259.9325	260.1513
	Vertical Legs	7.5000	3.0000	22.5000	22.5000	3.5324	93.5859	116.0859
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.0324	0.0000	0.0000
<b>Total</b>		<b>30.28</b>		<b>197.83</b>	<b>103.65</b>		<b>811.10</b>	<b>914.76</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.5324 in	S <sub>top</sub> =	126.74 in <sup>3</sup>	y-bar =	6.5324 in	S <sub>top</sub> =	126.74 in <sup>3</sup>
I <sub>x</sub> =	914.76 in <sup>4</sup>	S <sub>bottom</sub> =	140.03 in <sup>3</sup>	I <sub>x</sub> =	914.76 in <sup>4</sup>	S <sub>bottom</sub> =	140.03 in <sup>3</sup>
C <sub>top</sub> =	7.2176 in	A =	30.2838 in <sup>2</sup>	C <sub>top</sub> =	7.2176 in	A =	30.2838 in <sup>2</sup>
C <sub>bottom</sub> =	6.5324 in	r <sub>x</sub> =	5.4960 in	C <sub>bottom</sub> =	6.5324 in	r <sub>x</sub> =	5.4960 in
J =	4.4693 in <sup>4</sup>	Z =	150.77 in <sup>3</sup>	Z =	150.77 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	6.2500	61.5000	124.0578	0.0000	0.0000	124.0578
	Web		6.2250	6.2500	38.9063	0.1297	0.0000	0.0000	0.1297
2 (Left)	Horizontal Leg		3.3594	2.6875	9.0283	8.0879	3.5625	42.6352	50.7231
	Vertical Leg		3.7500	5.6875	21.3281	0.1221	0.5625	1.1865	1.3086
2 (Right)	Horizontal Leg		3.3594	9.8125	32.9639	8.0879	3.5625	42.6352	50.7231
	Vertical Leg		3.7500	6.8125	25.5469	0.1221	0.5625	1.1865	1.3086
3	Additional Plate		0.0000	6.2500	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>30.28</b>		<b>189.27</b>	<b>140.61</b>		<b>87.64</b>	<b>228.25</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.2500 in	S <sub>right</sub> =	36.52 in <sup>3</sup>	x-bar =	6.2500 in	S <sub>right</sub> =	36.52 in <sup>3</sup>
I <sub>y</sub> =	228.25 in <sup>4</sup>	S <sub>left</sub> =	36.52 in <sup>3</sup>	I <sub>y</sub> =	228.25 in <sup>4</sup>	S <sub>left</sub> =	36.52 in <sup>3</sup>
C <sub>right</sub> =	6.2500 in	A =	30.2838 in <sup>2</sup>	C <sub>right</sub> =	6.2500 in	A =	30.2838 in <sup>2</sup>
C <sub>left</sub> =	6.2500 in	r <sub>y</sub> =	2.7454 in	C <sub>left</sub> =	6.2500 in	r <sub>y</sub> =	2.7454 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	452.31 k-ft	452.31 k-ft
V	270.27 k	270.27 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x101	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	6.0000 in
$C_1 = d =$	14.8750 in	$C_2 = t =$	0.6250 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	15.3750 in
$B_3 = t =$	0.5000 in	$GAP =$	0.5000 in

\*select from dropdown list

Coped Stringer S3-15 @ FB E4

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	14.9750	147.3540	0.5248	7.7394	589.4056	589.9304
	Web	7.0375	7.5375	53.0452	116.1807	0.3019	0.6416	116.8223
2	Horizontal Legs	6.7188	0.3125	2.0996	0.2187	6.9231	322.0213	322.2400
	Vertical Legs	7.5000	3.0000	22.5000	22.5000	4.2356	134.5497	157.0497
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.7356	0.0000	0.0000
<b>Total</b>		<b>31.10</b>		<b>225.00</b>	<b>139.42</b>		<b>1046.62</b>	<b>1186.04</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	7.2356 in	S <sub>top</sub> =	145.72 in <sup>3</sup>	y-bar =	7.2356 in	S <sub>top</sub> =	145.72 in <sup>3</sup>
I <sub>x</sub> =	1186.04 in <sup>4</sup>	S <sub>bottom</sub> =	163.92 in <sup>3</sup>	I <sub>x</sub> =	1186.04 in <sup>4</sup>	S <sub>bottom</sub> =	163.92 in <sup>3</sup>
C <sub>top</sub> =	8.1394 in	A =	31.0963 in <sup>2</sup>	C <sub>top</sub> =	8.1394 in	A =	31.0963 in <sup>2</sup>
C <sub>bottom</sub> =	7.2356 in	r <sub>x</sub> =	6.1758 in	C <sub>bottom</sub> =	7.2356 in	r <sub>x</sub> =	6.1758 in
J =	4.5371 in <sup>4</sup>	Z =	173.82 in <sup>3</sup>	Z =	173.82 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	6.2500	61.5000	124.0578	0.0000	0.0000	124.0578
	Web		7.0375	6.2500	43.9844	0.1466	0.0000	0.0000	0.1466
2 (Left)	Horizontal Leg		3.3594	2.6875	9.0283	8.0879	3.5625	42.6352	50.7231
	Vertical Leg		3.7500	5.6875	21.3281	0.1221	0.5625	1.1865	1.3086
2 (Right)	Horizontal Leg		3.3594	9.8125	32.9639	8.0879	3.5625	42.6352	50.7231
	Vertical Leg		3.7500	6.8125	25.5469	0.1221	0.5625	1.1865	1.3086
3	Additional Plate		0.0000	6.2500	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>31.10</b>		<b>194.35</b>	<b>140.62</b>		<b>87.64</b>	<b>228.27</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.2500 in	S <sub>right</sub> =	36.52 in <sup>3</sup>	x-bar =	6.2500 in	S <sub>right</sub> =	36.52 in <sup>3</sup>
I <sub>y</sub> =	228.27 in <sup>4</sup>	S <sub>left</sub> =	36.52 in <sup>3</sup>	I <sub>y</sub> =	228.27 in <sup>4</sup>	S <sub>left</sub> =	36.52 in <sup>3</sup>
C <sub>right</sub> =	6.2500 in	A =	31.0963 in <sup>2</sup>	C <sub>right</sub> =	6.2500 in	A =	31.0963 in <sup>2</sup>
C <sub>left</sub> =	6.2500 in	r <sub>y</sub> =	2.7094 in	C <sub>left</sub> =	6.2500 in	r <sub>y</sub> =	2.7094 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	521.46 k-ft	521.46 k-ft
V	287.23 k	287.23 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x101	<b>Bottom Angles:</b>
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$ 4.0000 in
$C_1 = d =$	17.2500 in	$C_2 = t =$ 0.5000 in
$D_1 = t_w =$	0.5000 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	$H =$ 17.6875 in
$B_3 = t =$	0.5000 in	$Gap =$ 0.4375 in

\*select from dropdown list

Coped Stringer S3-15 @ FB E5

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	17.2875	170.1090	0.5248	7.8468	605.8702	606.3950
	Web	8.2250	8.6625	71.2491	185.4755	0.7782	4.9811	190.4566
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	9.1907	295.6418	295.7147
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	6.4407	248.8962	266.8962
3	Additional Plate	0.0000	0.4375	0.0000	0.0000	9.0032	0.0000	0.0000
<b>Total</b>		<b>27.57</b>		<b>260.23</b>	<b>204.07</b>		<b>1155.39</b>	<b>1359.46</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	9.4407 in	S <sub>top</sub> =	164.85 in <sup>3</sup>	y-bar =	9.4407 in	S <sub>top</sub> =	164.85 in <sup>3</sup>
I <sub>x</sub> =	1359.46 in <sup>4</sup>	S <sub>bottom</sub> =	144.00 in <sup>3</sup>	I <sub>x</sub> =	1359.46 in <sup>4</sup>	S <sub>bottom</sub> =	144.00 in <sup>3</sup>
C <sub>top</sub> =	8.2468 in	A =	27.5650 in <sup>2</sup>	C <sub>top</sub> =	8.2468 in	A =	27.5650 in <sup>2</sup>
C <sub>bottom</sub> =	9.4407 in	r <sub>x</sub> =	7.0227 in	C <sub>bottom</sub> =	9.4407 in	r <sub>x</sub> =	7.0227 in
J =	3.5763 in <sup>4</sup>	Z =	182.06 in <sup>3</sup>			Z =	182.06 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	4.2500	41.8200	124.0578	1.9000	35.5224	159.5802
	Web		8.2250	4.2500	34.9563	0.1714	1.9000	29.6923	29.8636
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.4000	33.8800	35.6665
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.4000	17.2800	17.3425
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.6000	0.6300	2.4165
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.4000	5.8800	5.9425
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	1.9000	0.0000	0.0000
<b>Total</b>			<b>27.57</b>		<b>117.15</b>	<b>127.93</b>		<b>122.88</b>	<b>250.81</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.1500 in	S <sub>right</sub> =	40.78 in <sup>3</sup>	x-bar =	6.1500 in	S <sub>right</sub> =	40.78 in <sup>3</sup>
I <sub>y</sub> =	250.81 in <sup>4</sup>	S <sub>left</sub> =	40.78 in <sup>3</sup>	I <sub>y</sub> =	250.81 in <sup>4</sup>	S <sub>left</sub> =	40.78 in <sup>3</sup>
C <sub>right</sub> =	6.1500 in	A =	27.5650 in <sup>2</sup>	C <sub>right</sub> =	6.1500 in	A =	27.5650 in <sup>2</sup>
C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.0164 in	C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.0164 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	546.18 k-ft	546.18 k-ft
V	286.58 k	286.58 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



Made By CTG  
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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x101	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	12.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	12.8750 in
$B_3 = t =$	0.5000 in	$GAP =$	0.3750 in

\*select from dropdown list

Coped Stringer S4-15 @ FB E2

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	12.4750	122.7540	0.5248	5.4069	287.6689	288.1937
	Web	5.8500	6.2250	36.4163	66.7339	0.8431	4.1582	70.8921
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.8181	162.7023	162.7753
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.0681	99.2963	117.2963
3	Additional Plate	0.0000	0.3750	0.0000	0.0000	6.6931	0.0000	0.0000
<b>Total</b>		<b>25.19</b>		<b>178.05</b>	<b>85.33</b>		<b>553.83</b>	<b>639.16</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



Made By CTG  
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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	7.0681 in	S <sub>top</sub> =	110.07 in <sup>3</sup>	y-bar =	7.0681 in	S <sub>top</sub> =	110.07 in <sup>3</sup>
I <sub>x</sub> =	639.16 in <sup>4</sup>	S <sub>bottom</sub> =	90.43 in <sup>3</sup>	I <sub>x</sub> =	639.16 in <sup>4</sup>	S <sub>bottom</sub> =	90.43 in <sup>3</sup>
C <sub>top</sub> =	5.8069 in	A =	25.1900 in <sup>2</sup>	C <sub>top</sub> =	5.8069 in	A =	25.1900 in <sup>2</sup>
C <sub>bottom</sub> =	7.0681 in	r <sub>x</sub> =	5.0372 in	C <sub>bottom</sub> =	7.0681 in	r <sub>x</sub> =	5.0372 in
J =	3.3784 in <sup>4</sup>	Z =	118.82 in <sup>3</sup>			Z =	118.82 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	4.2500	41.8200	124.0578	1.9000	35.5224	159.5802
	Web		5.8500	4.2500	24.8625	0.1219	1.9000	21.1185	21.2404
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.4000	33.8800	35.6665
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.4000	17.2800	17.3425
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.6000	0.6300	2.4165
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.4000	5.8800	5.9425
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	1.9000	0.0000	0.0000
<b>Total</b>			<b>25.19</b>		<b>107.06</b>	<b>127.88</b>		<b>114.31</b>	<b>242.19</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.1500 in	S <sub>right</sub> =	39.38 in <sup>3</sup>	x-bar =	6.1500 in	S <sub>right</sub> =	39.38 in <sup>3</sup>
I <sub>y</sub> =	242.19 in <sup>4</sup>	S <sub>left</sub> =	39.38 in <sup>3</sup>	I <sub>y</sub> =	242.19 in <sup>4</sup>	S <sub>left</sub> =	39.38 in <sup>3</sup>
C <sub>right</sub> =	6.1500 in	A =	25.1900 in <sup>2</sup>	C <sub>right</sub> =	6.1500 in	A =	25.1900 in <sup>2</sup>
C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.1007 in	C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.1007 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	356.46 k-ft	356.46 k-ft
V	236.99 k	236.99 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



Made By CTG  
Checked By DMP

Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x101	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	6.0000 in
$C_1 = d =$	13.7500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	14.2500 in
$B_3 = t =$	0.5000 in	$Gap =$	0.5000 in

\*select from dropdown list

Coped Stringer S4-15 @ FB E3

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	13.8500	136.2840	0.5248	6.6301	432.5461	433.0709
	Web	6.4750	6.9750	45.1631	90.4895	0.2449	0.3884	90.8779
2	Horizontal Legs	5.5000	0.2500	1.3750	0.1146	6.9699	267.1890	267.3035
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.2199	106.8464	124.8464
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.7199	0.0000	0.0000
<b>Total</b>		<b>27.82</b>		<b>200.82</b>	<b>109.13</b>		<b>806.97</b>	<b>916.10</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	7.2199 in	S <sub>top</sub> =	130.31 in <sup>3</sup>	y-bar =	7.2199 in	S <sub>top</sub> =	130.31 in <sup>3</sup>
I <sub>x</sub> =	916.10 in <sup>4</sup>	S <sub>bott.</sub> =	126.88 in <sup>3</sup>	I <sub>x</sub> =	916.10 in <sup>4</sup>	S <sub>bott.</sub> =	126.88 in <sup>3</sup>
C <sub>top</sub> =	7.0301 in	A =	27.8150 in <sup>2</sup>	C <sub>top</sub> =	7.0301 in	A =	27.8150 in <sup>2</sup>
C <sub>bottom</sub> =	7.2199 in	r <sub>x</sub> =	5.7389 in	C <sub>bottom</sub> =	7.2199 in	r <sub>x</sub> =	5.7389 in
J =	3.5971 in <sup>4</sup>	Z =	148.23 in <sup>3</sup>			Z =	148.23 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	6.2500	61.5000	124.0578	0.0000	0.0000	124.0578
	Web		6.4750	6.2500	40.4688	0.1349	0.0000	0.0000	0.1349
2 (Left)	Horizontal Leg		2.7500	2.7500	7.5625	6.9323	3.5000	33.6875	40.6198
	Vertical Leg		3.0000	5.7500	17.2500	0.0625	0.5000	0.7500	0.8125
2 (Right)	Horizontal Leg		2.7500	9.7500	26.8125	6.9323	3.5000	33.6875	40.6198
	Vertical Leg		3.0000	6.7500	20.2500	0.0625	0.5000	0.7500	0.8125
3	Additional Plate		0.0000	6.2500	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>27.82</b>		<b>173.84</b>	<b>138.18</b>		<b>68.88</b>	<b>207.06</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.2500 in	S <sub>right</sub> =	33.13 in <sup>3</sup>	x-bar =	6.2500 in	S <sub>right</sub> =	33.13 in <sup>3</sup>
I <sub>y</sub> =	207.06 in <sup>4</sup>	S <sub>left</sub> =	33.13 in <sup>3</sup>	I <sub>y</sub> =	207.06 in <sup>4</sup>	S <sub>left</sub> =	33.13 in <sup>3</sup>
C <sub>right</sub> =	6.2500 in	A =	27.8150 in <sup>2</sup>	C <sub>right</sub> =	6.2500 in	A =	27.8150 in <sup>2</sup>
C <sub>left</sub> =	6.2500 in	r <sub>y</sub> =	2.7284 in	C <sub>left</sub> =	6.2500 in	r <sub>y</sub> =	2.7284 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	380.65 k-ft	380.65 k-ft
V	250.04 k	250.04 k

F <sub>y</sub> =	36.00 ksi
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\*Noncompact Section





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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x101	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	6.0000 in
$C_1 = d =$	15.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	16.0000 in
$B_3 = t =$	0.5000 in	$GAP =$	0.5000 in

\*select from dropdown list

Coped Stringer S4-15 @ FB E4

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	15.6000	153.5040	0.5248	7.5632	562.8640	563.3888
	Web	7.3500	7.8500	57.6975	132.3551	0.1868	0.2565	132.6117
2	Horizontal Legs	5.5000	0.2500	1.3750	0.1146	7.7868	333.4905	333.6051
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	5.0368	152.2176	170.2176
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	7.5368	0.0000	0.0000
<b>Total</b>		<b>28.69</b>		<b>230.58</b>	<b>150.99</b>		<b>1048.83</b>	<b>1199.82</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	8.0368 in	S <sub>top</sub> =	150.67 in <sup>3</sup>	y-bar =	8.0368 in	S <sub>top</sub> =	150.67 in <sup>3</sup>
I <sub>x</sub> =	1199.82 in <sup>4</sup>	S <sub>bottom</sub> =	149.29 in <sup>3</sup>	I <sub>x</sub> =	1199.82 in <sup>4</sup>	S <sub>bottom</sub> =	149.29 in <sup>3</sup>
C <sub>top</sub> =	7.9632 in	A =	28.6900 in <sup>2</sup>	C <sub>top</sub> =	7.9632 in	A =	28.6900 in <sup>2</sup>
C <sub>bottom</sub> =	8.0368 in	r <sub>x</sub> =	6.4669 in	C <sub>bottom</sub> =	8.0368 in	r <sub>x</sub> =	6.4669 in
J =	3.6700 in <sup>4</sup>	Z =	172.79 in <sup>3</sup>			Z =	172.79 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	6.2500	61.5000	124.0578	0.0000	0.0000	124.0578
	Web		7.3500	6.2500	45.9375	0.1531	0.0000	0.0000	0.1531
2 (Left)	Horizontal Leg		2.7500	2.7500	7.5625	6.9323	3.5000	33.6875	40.6198
	Vertical Leg		3.0000	5.7500	17.2500	0.0625	0.5000	0.7500	0.8125
2 (Right)	Horizontal Leg		2.7500	9.7500	26.8125	6.9323	3.5000	33.6875	40.6198
	Vertical Leg		3.0000	6.7500	20.2500	0.0625	0.5000	0.7500	0.8125
3	Additional Plate		0.0000	6.2500	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>28.69</b>		<b>179.31</b>	<b>138.20</b>		<b>68.88</b>	<b>207.08</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.2500 in	S <sub>right</sub> =	33.13 in <sup>3</sup>	x-bar =	6.2500 in	S <sub>right</sub> =	33.13 in <sup>3</sup>
I <sub>y</sub> =	207.08 in <sup>4</sup>	S <sub>left</sub> =	33.13 in <sup>3</sup>	I <sub>y</sub> =	207.08 in <sup>4</sup>	S <sub>left</sub> =	33.13 in <sup>3</sup>
C <sub>right</sub> =	6.2500 in	A =	28.6900 in <sup>2</sup>	C <sub>right</sub> =	6.2500 in	A =	28.6900 in <sup>2</sup>
C <sub>left</sub> =	6.2500 in	r <sub>y</sub> =	2.6866 in	C <sub>left</sub> =	6.2500 in	r <sub>y</sub> =	2.6866 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	447.87 k-ft	447.87 k-ft
V	268.31 k	268.31 k

F <sub>y</sub> =	36.00 ksi
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\*Noncompact Section



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x101	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	18.0000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	18.3125 in
$B_3 = t =$	0.5000 in	$Gap =$	0.3125 in

\*select from dropdown list

Coped Stringer S4-15 @ FB E5

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	17.9125	176.2590	0.5248	8.1852	659.2511	659.7759
	Web	8.6000	8.9125	76.6475	212.0187	0.8148	5.7099	217.7286
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	9.4773	314.3690	314.4419
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	6.7273	271.5415	289.5415
3	Additional Plate	0.0000	0.3125	0.0000	0.0000	9.4148	0.0000	0.0000
<b>Total</b>		<b>27.94</b>		<b>271.78</b>	<b>230.62</b>		<b>1250.87</b>	<b>1481.49</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	9.7273	in	S <sub>top</sub> =	172.56	in <sup>3</sup>	y-bar =	9.7273	in	S <sub>top</sub> =	172.56	in <sup>3</sup>
I <sub>x</sub> =	1481.49	in <sup>4</sup>	S <sub>bottom</sub> =	152.30	in <sup>3</sup>	I <sub>x</sub> =	1481.49	in <sup>4</sup>	S <sub>bottom</sub> =	152.30	in <sup>3</sup>
C <sub>top</sub> =	8.5852	in	A =	27.9400	in <sup>2</sup>	C <sub>top</sub> =	8.5852	in	A =	27.9400	in <sup>2</sup>
C <sub>bottom</sub> =	9.7273	in	r <sub>x</sub> =	7.2818	in	C <sub>bottom</sub> =	9.7273	in	r <sub>x</sub> =	7.2818	in
J =	3.6075	in <sup>4</sup>	Z =	191.28	in <sup>3</sup>	Z =	191.28	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	4.2500	41.8200	124.0578	1.9000	35.5224	159.5802
	Web		8.6000	4.2500	36.5500	0.1792	1.9000	31.0460	31.2252
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.4000	33.8800	35.6665
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.4000	17.2800	17.3425
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.6000	0.6300	2.4165
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.4000	5.8800	5.9425
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	1.9000	0.0000	0.0000
<b>Total</b>			<b>27.94</b>		<b>118.75</b>	<b>127.93</b>		<b>124.24</b>	<b>252.17</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	6.1500	in	S <sub>right</sub> =	41.00	in <sup>3</sup>	x-bar =	6.1500	in	S <sub>right</sub> =	41.00	in <sup>3</sup>
I <sub>y</sub> =	252.17	in <sup>4</sup>	S <sub>left</sub> =	41.00	in <sup>3</sup>	I <sub>y</sub> =	252.17	in <sup>4</sup>	S <sub>left</sub> =	41.00	in <sup>3</sup>
C <sub>right</sub> =	6.1500	in	A =	27.9400	in <sup>2</sup>	C <sub>right</sub> =	6.1500	in	A =	27.9400	in <sup>2</sup>
C <sub>left</sub> =	6.1500	in	r <sub>y</sub> =	3.0043	in	C <sub>left</sub> =	6.1500	in	r <sub>y</sub> =	3.0043	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	573.84 k-ft	573.84 k-ft
V	294.41 k	294.41 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x101	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	13.0000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	13.3750 in
$B_3 = t =$	0.5000 in	$Gap =$	0.3750 in

\*select from dropdown list

Coped Stringer S5-15 @ FB E2

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	12.9750	127.6740	0.5248	5.6619	315.4366	315.9614
	Web	6.1000	6.4750	39.4975	75.6603	0.8381	4.2852	79.9455
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	7.0631	174.6082	174.6812
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.3131	111.6195	129.6195
3	Additional Plate	0.0000	0.3750	0.0000	0.0000	6.9381	0.0000	0.0000
<b>Total</b>		<b>25.44</b>		<b>186.05</b>	<b>94.26</b>		<b>605.95</b>	<b>700.21</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	7.3131 in	S <sub>top</sub> =	115.51 in <sup>3</sup>	y-bar =	7.3131 in	S <sub>top</sub> =	115.51 in <sup>3</sup>
I <sub>x</sub> =	700.21 in <sup>4</sup>	S <sub>bott.</sub> =	95.75 in <sup>3</sup>	I <sub>x</sub> =	700.21 in <sup>4</sup>	S <sub>bott.</sub> =	95.75 in <sup>3</sup>
C <sub>top</sub> =	6.0619 in	A =	25.4400 in <sup>2</sup>	C <sub>top</sub> =	6.0619 in	A =	25.4400 in <sup>2</sup>
C <sub>bottom</sub> =	7.3131 in	r <sub>x</sub> =	5.2463 in	C <sub>bottom</sub> =	7.3131 in	r <sub>x</sub> =	5.2463 in
J =	3.3992 in <sup>4</sup>	Z =	125.14 in <sup>3</sup>			Z =	125.14 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	4.2500	41.8200	124.0578	1.9000	35.5224	159.5802
	Web		6.1000	4.2500	25.9250	0.1271	1.9000	22.0210	22.1481
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.4000	33.8800	35.6665
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.4000	17.2800	17.3425
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.6000	0.6300	2.4165
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.4000	5.8800	5.9425
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	1.9000	0.0000	0.0000
<b>Total</b>			<b>25.44</b>		<b>108.12</b>	<b>127.88</b>		<b>115.21</b>	<b>243.10</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.1500 in	S <sub>right</sub> =	39.53 in <sup>3</sup>	x-bar =	6.1500 in	S <sub>right</sub> =	39.53 in <sup>3</sup>
I <sub>y</sub> =	243.10 in <sup>4</sup>	S <sub>left</sub> =	39.53 in <sup>3</sup>	I <sub>y</sub> =	243.10 in <sup>4</sup>	S <sub>left</sub> =	39.53 in <sup>3</sup>
C <sub>right</sub> =	6.1500 in	A =	25.4400 in <sup>2</sup>	C <sub>right</sub> =	6.1500 in	A =	25.4400 in <sup>2</sup>
C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.0912 in	C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.0912 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	375.42 k-ft	375.42 k-ft
V	242.21 k	242.21 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x101	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	6.0000 in
$C_1 = d =$	14.1250 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	14.6250 in
$B_3 = t =$	0.5000 in	$GAP =$	0.5000 in

\*select from dropdown list

Coped Stringer S5-15 @ FB E3

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	14.2250	139.9740	0.5248	6.8303	459.0700	459.5948
	Web	6.6625	7.1625	47.7202	98.5804	0.2322	0.3591	98.9395
2	Horizontal Legs	5.5000	0.2500	1.3750	0.1146	7.1447	280.7544	280.8690
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.3947	115.8786	133.8786
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.8947	0.0000	0.0000
<b>Total</b>		<b>28.00</b>		<b>207.07</b>	<b>117.22</b>		<b>856.06</b>	<b>973.28</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	7.3947	in	S <sub>top</sub> =	134.61	in <sup>3</sup>	y-bar =	7.3947	in	S <sub>top</sub> =	134.61	in <sup>3</sup>
I <sub>x</sub> =	973.28	in <sup>4</sup>	S <sub>bott.</sub> =	131.62	in <sup>3</sup>	I <sub>x</sub> =	973.28	in <sup>4</sup>	S <sub>bott.</sub> =	131.62	in <sup>3</sup>
C <sub>top</sub> =	7.2303	in	A =	28.0025	in <sup>2</sup>	C <sub>top</sub> =	7.2303	in	A =	28.0025	in <sup>2</sup>
C <sub>bottom</sub> =	7.3947	in	r <sub>x</sub> =	5.8955	in	C <sub>bottom</sub> =	7.3947	in	r <sub>x</sub> =	5.8955	in
J =	3.6127	in <sup>4</sup>	Z =	153.39	in <sup>3</sup>	Z =	153.39	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	6.2500	61.5000	124.0578	0.0000	0.0000	124.0578
	Web		6.6625	6.2500	41.6406	0.1388	0.0000	0.0000	0.1388
2 (Left)	Horizontal Leg		2.7500	2.7500	7.5625	6.9323	3.5000	33.6875	40.6198
	Vertical Leg		3.0000	5.7500	17.2500	0.0625	0.5000	0.7500	0.8125
2 (Right)	Horizontal Leg		2.7500	9.7500	26.8125	6.9323	3.5000	33.6875	40.6198
	Vertical Leg		3.0000	6.7500	20.2500	0.0625	0.5000	0.7500	0.8125
3	Additional Plate		0.0000	6.2500	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>28.00</b>		<b>175.02</b>	<b>138.19</b>		<b>68.88</b>	<b>207.06</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	6.2500	in	S <sub>right</sub> =	33.13	in <sup>3</sup>	x-bar =	6.2500	in	S <sub>right</sub> =	33.13	in <sup>3</sup>
I <sub>y</sub> =	207.06	in <sup>4</sup>	S <sub>left</sub> =	33.13	in <sup>3</sup>	I <sub>y</sub> =	207.06	in <sup>4</sup>	S <sub>left</sub> =	33.13	in <sup>3</sup>
C <sub>right</sub> =	6.2500	in	A =	28.0025	in <sup>2</sup>	C <sub>right</sub> =	6.2500	in	A =	28.0025	in <sup>2</sup>
C <sub>left</sub> =	6.2500	in	r <sub>y</sub> =	2.7193	in	C <sub>left</sub> =	6.2500	in	r <sub>y</sub> =	2.7193	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	394.86 k-ft	394.86 k-ft
V	253.95 k	253.95 k

F <sub>y</sub> =	36.00 ksi
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\*Noncompact Section





Made By CTG  
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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x101	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	6.0000 in
$C_1 = d =$	16.0000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	16.5000 in
$B_3 = t =$	0.5000 in	$Gap =$	0.5000 in

\*select from dropdown list

Coped Stringer S5-15 @ FB E4

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	16.1000	158.4240	0.5248	7.8291	603.1454	603.6702
	Web	7.6000	8.1000	61.5600	146.3253	0.1709	0.2219	146.5472
2	Horizontal Legs	5.5000	0.2500	1.3750	0.1146	8.0209	353.8390	353.9536
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	5.2709	166.6925	184.6925
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	7.7709	0.0000	0.0000
<b>Total</b>		<b>28.94</b>		<b>239.36</b>	<b>164.96</b>		<b>1123.90</b>	<b>1288.86</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	8.2709 in	S <sub>top</sub> =	156.62 in <sup>3</sup>	y-bar =	8.2709 in	S <sub>top</sub> =	156.62 in <sup>3</sup>
I <sub>x</sub> =	1288.86 in <sup>4</sup>	S <sub>bott.</sub> =	155.83 in <sup>3</sup>	I <sub>x</sub> =	1288.86 in <sup>4</sup>	S <sub>bott.</sub> =	155.83 in <sup>3</sup>
C <sub>top</sub> =	8.2291 in	A =	28.9400 in <sup>2</sup>	C <sub>top</sub> =	8.2291 in	A =	28.9400 in <sup>2</sup>
C <sub>bottom</sub> =	8.2709 in	r <sub>x</sub> =	6.6735 in	C <sub>bottom</sub> =	8.2709 in	r <sub>x</sub> =	6.6735 in
J =	3.6909 in <sup>4</sup>	Z =	180.00 in <sup>3</sup>			Z =	180.00 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	6.2500	61.5000	124.0578	0.0000	0.0000	124.0578
	Web		7.6000	6.2500	47.5000	0.1583	0.0000	0.0000	0.1583
2 (Left)	Horizontal Leg		2.7500	2.7500	7.5625	6.9323	3.5000	33.6875	40.6198
	Vertical Leg		3.0000	5.7500	17.2500	0.0625	0.5000	0.7500	0.8125
2 (Right)	Horizontal Leg		2.7500	9.7500	26.8125	6.9323	3.5000	33.6875	40.6198
	Vertical Leg		3.0000	6.7500	20.2500	0.0625	0.5000	0.7500	0.8125
3	Additional Plate		0.0000	6.2500	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>28.94</b>		<b>180.88</b>	<b>138.21</b>		<b>68.88</b>	<b>207.08</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.2500 in	S <sub>right</sub> =	33.13 in <sup>3</sup>	x-bar =	6.2500 in	S <sub>right</sub> =	33.13 in <sup>3</sup>
I <sub>y</sub> =	207.08 in <sup>4</sup>	S <sub>left</sub> =	33.13 in <sup>3</sup>	I <sub>y</sub> =	207.08 in <sup>4</sup>	S <sub>left</sub> =	33.13 in <sup>3</sup>
C <sub>right</sub> =	6.2500 in	A =	28.9400 in <sup>2</sup>	C <sub>right</sub> =	6.2500 in	A =	28.9400 in <sup>2</sup>
C <sub>left</sub> =	6.2500 in	r <sub>y</sub> =	2.6750 in	C <sub>left</sub> =	6.2500 in	r <sub>y</sub> =	2.6750 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	467.49 k-ft	467.49 k-ft
V	273.53 k	273.53 k

F <sub>y</sub> =	36.00 ksi
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\*Noncompact Section



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x101	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	18.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	18.8750 in
$B_3 = t =$	0.5000 in	$GAP =$	0.3750 in

\*select from dropdown list

Coped Stringer S5-15 @ FB E5

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	18.4750	181.7940	0.5248	8.4604	704.3390	704.8638
	Web	8.8500	9.2250	81.6413	231.0514	0.7896	5.5170	236.5684
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	9.7646	333.7127	333.7857
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	7.0146	295.2237	313.2237
3	Additional Plate	0.0000	0.3750	0.0000	0.0000	9.6396	0.0000	0.0000
<b>Total</b>		<b>28.19</b>		<b>282.31</b>	<b>249.65</b>		<b>1338.79</b>	<b>1588.44</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	10.0146 in	S <sub>top</sub> =	179.27 in <sup>3</sup>	y-bar =	10.0146 in	S <sub>top</sub> =	179.27 in <sup>3</sup>
I <sub>x</sub> =	1588.44 in <sup>4</sup>	S <sub>bott.</sub> =	158.61 in <sup>3</sup>	I <sub>x</sub> =	1588.44 in <sup>4</sup>	S <sub>bott.</sub> =	158.61 in <sup>3</sup>
C <sub>top</sub> =	8.8604 in	A =	28.1900 in <sup>2</sup>	C <sub>top</sub> =	8.8604 in	A =	28.1900 in <sup>2</sup>
C <sub>bottom</sub> =	10.0146 in	r <sub>x</sub> =	7.5065 in	C <sub>bottom</sub> =	10.0146 in	r <sub>x</sub> =	7.5065 in
J =	3.6284 in <sup>4</sup>	Z =	198.89 in <sup>3</sup>	Z =	198.89 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	4.2500	41.8200	124.0578	1.9000	35.5224	159.5802
	Web		8.8500	4.2500	37.6125	0.1844	1.9000	31.9485	32.1329
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.4000	33.8800	35.6665
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.4000	17.2800	17.3425
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.6000	0.6300	2.4165
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.4000	5.8800	5.9425
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	1.9000	0.0000	0.0000
<b>Total</b>			<b>28.19</b>		<b>119.81</b>	<b>127.94</b>		<b>125.14</b>	<b>253.08</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.1500 in	S <sub>right</sub> =	41.15 in <sup>3</sup>	x-bar =	6.1500 in	S <sub>right</sub> =	41.15 in <sup>3</sup>
I <sub>y</sub> =	253.08 in <sup>4</sup>	S <sub>left</sub> =	41.15 in <sup>3</sup>	I <sub>y</sub> =	253.08 in <sup>4</sup>	S <sub>left</sub> =	41.15 in <sup>3</sup>
C <sub>right</sub> =	6.1500 in	A =	28.1900 in <sup>2</sup>	C <sub>right</sub> =	6.1500 in	A =	28.1900 in <sup>2</sup>
C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	2.9963 in	C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	2.9963 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	596.67 k-ft	596.67 k-ft
V	299.63 k	299.63 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x101	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	13.0000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	13.2500 in
$B_3 = t =$	0.5000 in	$Gap =$	0.2500 in

\*select from dropdown list

Coped Stringer S6-15 @ FB E2

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	12.8500	126.4440	0.5248	5.6152	310.2568	310.7816
	Web	6.1000	6.3500	38.7350	75.6603	0.8848	4.7758	80.4361
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.9848	170.7573	170.8302
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.2348	107.6026	125.6026
3	Additional Plate	0.0000	0.2500	0.0000	0.0000	6.9848	0.0000	0.0000
<b>Total</b>		<b>25.44</b>		<b>184.05</b>	<b>94.26</b>		<b>593.39</b>	<b>687.65</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	7.2348	in	S <sub>top</sub> =	114.32	in <sup>3</sup>	y-bar =	7.2348	in	S <sub>top</sub> =	114.32	in <sup>3</sup>
I <sub>x</sub> =	687.65	in <sup>4</sup>	S <sub>bott.</sub> =	95.05	in <sup>3</sup>	I <sub>x</sub> =	687.65	in <sup>4</sup>	S <sub>bott.</sub> =	95.05	in <sup>3</sup>
C <sub>top</sub> =	6.0152	in	A =	25.4400	in <sup>2</sup>	C <sub>top</sub> =	6.0152	in	A =	25.4400	in <sup>2</sup>
C <sub>bottom</sub> =	7.2348	in	r <sub>x</sub> =	5.1991	in	C <sub>bottom</sub> =	7.2348	in	r <sub>x</sub> =	5.1991	in
J =	3.3992	in <sup>4</sup>	Z =	123.96	in <sup>3</sup>	Z =	123.96	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	4.2500	41.8200	124.0578	1.9000	35.5224	159.5802
	Web		6.1000	4.2500	25.9250	0.1271	1.9000	22.0210	22.1481
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.4000	33.8800	35.6665
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.4000	17.2800	17.3425
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.6000	0.6300	2.4165
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.4000	5.8800	5.9425
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	1.9000	0.0000	0.0000
<b>Total</b>			<b>25.44</b>		<b>108.12</b>	<b>127.88</b>		<b>115.21</b>	<b>243.10</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	6.1500	in	S <sub>right</sub> =	39.53	in <sup>3</sup>	x-bar =	6.1500	in	S <sub>right</sub> =	39.53	in <sup>3</sup>
I <sub>y</sub> =	243.10	n <sup>4</sup>	S <sub>left</sub> =	39.53	in <sup>3</sup>	I <sub>y</sub> =	243.10	n <sup>4</sup>	S <sub>left</sub> =	39.53	in <sup>3</sup>
C <sub>right</sub> =	6.1500	in	A =	25.4400	in <sup>2</sup>	C <sub>right</sub> =	6.1500	in	A =	25.4400	in <sup>2</sup>
C <sub>left</sub> =	6.1500	in	r <sub>y</sub> =	3.0912	in	C <sub>left</sub> =	6.1500	in	r <sub>y</sub> =	3.0912	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	371.88 k-ft	371.88 k-ft
V	242.21 k	242.21 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



Made By CTG  
Checked By DMP

Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x101	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	6.0000 in
$C_1 = d =$	14.0000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	14.5000 in
$B_3 = t =$	0.5000 in	$Gap =$	0.5000 in

\*select from dropdown list

Coped Stringer S6-15 @ FB E3

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	14.1000	138.7440	0.5248	6.7636	450.1435	450.6683
	Web	6.6000	7.1000	46.8600	95.8320	0.2364	0.3688	96.2008
2	Horizontal Legs	5.5000	0.2500	1.3750	0.1146	7.0864	276.1938	276.3084
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.3364	112.8262	130.8262
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.8364	0.0000	0.0000
<b>Total</b>		<b>27.94</b>		<b>204.98</b>	<b>114.47</b>		<b>839.53</b>	<b>954.00</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	7.3364	in	S <sub>top</sub> =	133.17	in <sup>3</sup>	y-bar =	7.3364	in	S <sub>top</sub> =	133.17	in <sup>3</sup>
I <sub>x</sub> =	954.00	in <sup>4</sup>	S <sub>bottom</sub> =	130.04	in <sup>3</sup>	I <sub>x</sub> =	954.00	in <sup>4</sup>	S <sub>bottom</sub> =	130.04	in <sup>3</sup>
C <sub>top</sub> =	7.1636	in	A =	27.9400	in <sup>2</sup>	C <sub>top</sub> =	7.1636	in	A =	27.9400	in <sup>2</sup>
C <sub>bottom</sub> =	7.3364	in	r <sub>x</sub> =	5.8433	in	C <sub>bottom</sub> =	7.3364	in	r <sub>x</sub> =	5.8433	in
J =	3.6075	in <sup>4</sup>	Z =	151.66	in <sup>3</sup>	Z =	151.66	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	6.2500	61.5000	124.0578	0.0000	0.0000	124.0578
	Web		6.6000	6.2500	41.2500	0.1375	0.0000	0.0000	0.1375
2 (Left)	Horizontal Leg		2.7500	2.7500	7.5625	6.9323	3.5000	33.6875	40.6198
	Vertical Leg		3.0000	5.7500	17.2500	0.0625	0.5000	0.7500	0.8125
2 (Right)	Horizontal Leg		2.7500	9.7500	26.8125	6.9323	3.5000	33.6875	40.6198
	Vertical Leg		3.0000	6.7500	20.2500	0.0625	0.5000	0.7500	0.8125
3	Additional Plate		0.0000	6.2500	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>27.94</b>		<b>174.63</b>	<b>138.18</b>		<b>68.88</b>	<b>207.06</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	6.2500	in	S <sub>right</sub> =	33.13	in <sup>3</sup>	x-bar =	6.2500	in	S <sub>right</sub> =	33.13	in <sup>3</sup>
I <sub>y</sub> =	207.06	in <sup>4</sup>	S <sub>left</sub> =	33.13	in <sup>3</sup>	I <sub>y</sub> =	207.06	in <sup>4</sup>	S <sub>left</sub> =	33.13	in <sup>3</sup>
C <sub>right</sub> =	6.2500	in	A =	27.9400	in <sup>2</sup>	C <sub>right</sub> =	6.2500	in	A =	27.9400	in <sup>2</sup>
C <sub>left</sub> =	6.2500	in	r <sub>y</sub> =	2.7223	in	C <sub>left</sub> =	6.2500	in	r <sub>y</sub> =	2.7223	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	390.11 k-ft	390.11 k-ft
V	252.65 k	252.65 k

F <sub>y</sub> =	36.00 ksi
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\*Noncompact Section





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Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section*	W21x101	Bottom Angles:	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	6.0000 in
$C_1 = d =$	15.8750 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	16.3750 in
$B_3 = t =$	0.5000 in	Gap =	0.5000 in

\*select from dropdown list

Coped Stringer S6-15 @ FB E4

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	15.9750	157.1940	0.5248	7.7627	592.9485	593.4733
	Web	7.5375	8.0375	60.5827	142.7449	0.1748	0.2304	142.9753
2	Horizontal Legs	5.5000	0.2500	1.3750	0.1146	7.9623	348.6931	348.8077
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	5.2123	163.0105	181.0105
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	7.7123	0.0000	0.0000
<b>Total</b>		<b>28.88</b>		<b>237.15</b>	<b>161.38</b>		<b>1104.88</b>	<b>1266.27</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	8.2123	in	S <sub>top</sub> =	155.13	in <sup>3</sup>	y-bar =	8.2123	in	S <sub>top</sub> =	155.13	in <sup>3</sup>
I <sub>x</sub> =	1266.27	in <sup>4</sup>	S <sub>bott.</sub> =	154.19	in <sup>3</sup>	I <sub>x</sub> =	1266.27	in <sup>4</sup>	S <sub>bott.</sub> =	154.19	in <sup>3</sup>
C <sub>top</sub> =	8.1627	in	A =	28.8775	in <sup>2</sup>	C <sub>top</sub> =	8.1627	in	A =	28.8775	in <sup>2</sup>
C <sub>bottom</sub> =	8.2123	in	r <sub>x</sub> =	6.6219	in	C <sub>bottom</sub> =	8.2123	in	r <sub>x</sub> =	6.6219	in
J =	3.6857	in <sup>4</sup>	Z =	178.19	in <sup>3</sup>	Z =	178.19	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	6.2500	61.5000	124.0578	0.0000	0.0000	124.0578
	Web		7.5375	6.2500	47.1094	0.1570	0.0000	0.0000	0.1570
2 (Left)	Horizontal Leg		2.7500	2.7500	7.5625	6.9323	3.5000	33.6875	40.6198
	Vertical Leg		3.0000	5.7500	17.2500	0.0625	0.5000	0.7500	0.8125
2 (Right)	Horizontal Leg		2.7500	9.7500	26.8125	6.9323	3.5000	33.6875	40.6198
	Vertical Leg		3.0000	6.7500	20.2500	0.0625	0.5000	0.7500	0.8125
3	Additional Plate		0.0000	6.2500	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>28.88</b>		<b>180.48</b>	<b>138.20</b>		<b>68.88</b>	<b>207.08</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	6.2500	in	S <sub>right</sub> =	33.13	in <sup>3</sup>	x-bar =	6.2500	in	S <sub>right</sub> =	33.13	in <sup>3</sup>
I <sub>y</sub> =	207.08	in <sup>4</sup>	S <sub>left</sub> =	33.13	in <sup>3</sup>	I <sub>y</sub> =	207.08	in <sup>4</sup>	S <sub>left</sub> =	33.13	in <sup>3</sup>
C <sub>right</sub> =	6.2500	in	A =	28.8775	in <sup>2</sup>	C <sub>right</sub> =	6.2500	in	A =	28.8775	in <sup>2</sup>
C <sub>left</sub> =	6.2500	in	r <sub>y</sub> =	2.6779	in	C <sub>left</sub> =	6.2500	in	r <sub>y</sub> =	2.6779	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	462.57 k-ft	462.57 k-ft
V	272.22 k	272.22 k

F<sub>y</sub> = **36.00 ksi**

\*Noncompact Section



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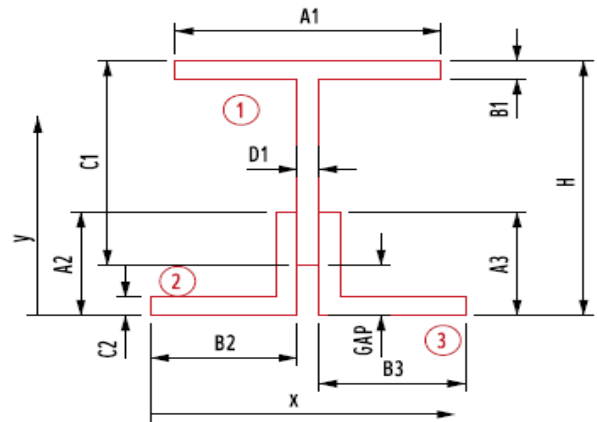
Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W21x101	Left Angle:	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	18.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in	Right Angle:	
		$A_3 = L_v =$	6.0000 in
		$B_3 = L_h =$	6.0000 in
		$C_3 = t =$	0.5000 in
		Miscellaneous:	
		H =	18.7500 in
		Gap =	0.2500 in



**Coped Stringer S6-15 @ FB E5**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	18.3500	180.5640	0.5248	8.7500	753.3750	753.8998
	Web		8.8500	9.1000	80.5350	231.0514	0.5000	2.2125	233.2639
2	Horizontal Legs		1.7500	0.2500	0.4375	0.0365	9.3500	152.9894	153.0258
	Vertical Legs		3.0000	3.0000	9.0000	9.0000	6.6000	130.6800	139.6800
3	Horizontal Legs		2.7500	0.2500	0.6875	0.0573	9.3500	240.4119	240.4692
	Vertical Legs		3.0000	3.0000	9.0000	9.0000	6.6000	130.6800	139.6800
<b>Total</b>			<b>29.19</b>		<b>280.22</b>	<b>249.67</b>		<b>1410.35</b>	<b>1660.02</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	9.6000 in	$S_{top} =$	181.42 in <sup>3</sup>	y-bar =	9.6000 in	$S_{top} =$	181.42 in <sup>3</sup>
$I_x =$	1660.02 in <sup>4</sup>	$S_{bott.} =$	172.92 in <sup>3</sup>	$I_x =$	1660.02 in <sup>4</sup>	$S_{bott.} =$	172.92 in <sup>3</sup>
$C_{top} =$	9.1500 in	A =	29.1900 in <sup>2</sup>	$C_{top} =$	9.1500 in	A =	29.1900 in <sup>2</sup>
$C_{bottom} =$	9.6000 in	$r_x =$	7.5412 in	$C_{bottom} =$	9.6000 in	$r_x =$	7.5412 in
J =	3.7117 in <sup>4</sup>	Z =	174.70 in <sup>3</sup>			Z =	174.70 in <sup>3</sup>



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Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	4.2500	41.8200	124.0578	0.1799	0.3183	124.3761
	Web		8.8500	4.2500	37.6125	0.1844	0.1799	0.2863	0.4707
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.6799	12.5679	14.3543
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.6799	1.3866	1.4491
3 (Right)	Horizontal Leg		2.7500	7.7500	21.3125	6.9323	3.3201	30.3142	37.2465
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	0.3201	0.3075	0.3700
<b>Total</b>			<b>29.19</b>		<b>129.31</b>	<b>133.09</b>		<b>45.18</b>	<b>178.27</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	4.4299	in	S <sub>right</sub> =	29.86	in <sup>3</sup>	x-bar =	4.4299	in	S <sub>right</sub> =	29.86	in <sup>3</sup>
I <sub>y</sub> =	178.27	in <sup>4</sup>	S <sub>left</sub> =	28.16	in <sup>3</sup>	I <sub>y</sub> =	178.27	in <sup>4</sup>	S <sub>left</sub> =	28.16	in <sup>3</sup>
C <sub>right</sub> =	5.9701	in	A =	29.1900	in <sup>2</sup>	C <sub>right</sub> =	5.9701	in	A =	29.1900	in <sup>2</sup>
C <sub>left</sub> =	6.3299	in	r <sub>y</sub> =	2.4713	in	C <sub>left</sub> =	6.3299	in	r <sub>y</sub> =	2.4713	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	524.10 k-ft	524.10 k-ft
V	299.63 k	299.63 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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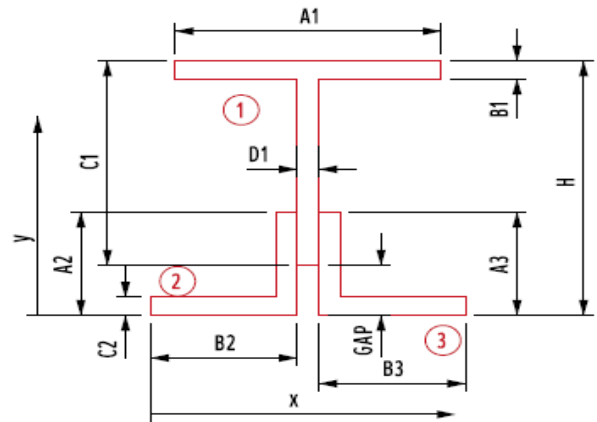
Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W21x101	Left Angle:	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	13.1250 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in	Right Angle:	
		$A_3 = L_v =$	6.0000 in
		$B_3 = L_h =$	6.0000 in
		$C_3 = t =$	0.5000 in
		Miscellaneous:	
		H =	13.6250 in
		Gap =	0.5000 in



**Coped Stringer S7-15 @ FB E2**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	13.2250	130.1340	0.5248	6.0439	359.4447	359.9695
	Web		6.1625	6.6625	41.0577	78.0099	0.5186	1.6573	79.6671
2	Horizontal Legs		1.7500	0.2500	0.4375	0.0365	6.9311	84.0698	84.1063
	Vertical Legs		3.0000	3.0000	9.0000	9.0000	4.1811	52.4444	61.4444
3	Horizontal Legs		2.7500	0.2500	0.6875	0.0573	6.9311	132.1098	132.1671
	Vertical Legs		3.0000	3.0000	9.0000	9.0000	4.1811	52.4444	61.4444
<b>Total</b>			<b>26.50</b>		<b>190.32</b>	<b>96.63</b>		<b>682.17</b>	<b>778.80</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	7.1811 in	S <sub>top</sub> =	120.86 in <sup>3</sup>	y-bar =	7.1811 in	S <sub>top</sub> =	120.86 in <sup>3</sup>
I <sub>x</sub> =	778.80 in <sup>4</sup>	S <sub>bott.</sub> =	108.45 in <sup>3</sup>	I <sub>x</sub> =	778.80 in <sup>4</sup>	S <sub>bott.</sub> =	108.45 in <sup>3</sup>
C <sub>top</sub> =	6.4439 in	A =	26.5025 in <sup>2</sup>	C <sub>top</sub> =	6.4439 in	A =	26.5025 in <sup>2</sup>
C <sub>bottom</sub> =	7.1811 in	r <sub>x</sub> =	5.4209 in	C <sub>bottom</sub> =	7.1811 in	r <sub>x</sub> =	5.4209 in
J =	3.4877 in <sup>4</sup>	Z =	119.70 in <sup>3</sup>	J =	3.4877 in <sup>4</sup>	Z =	119.70 in <sup>3</sup>



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	4.2500	41.8200	124.0578	0.1981	0.3861	124.4439
	Web		6.1625	4.2500	26.1906	0.1284	0.1981	0.2418	0.3702
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.6981	12.7395	14.5260
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.6981	1.4620	1.5245
3 (Right)	Horizontal Leg		2.7500	7.7500	21.3125	6.9323	3.3019	29.9821	36.9144
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	0.3019	0.2734	0.3359
<b>Total</b>			<b>26.50</b>		<b>117.89</b>	<b>133.03</b>		<b>45.09</b>	<b>178.11</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	4.4481	in	S <sub>right</sub> =	29.93	in <sup>3</sup>	x-bar =	4.4481	in	S <sub>right</sub> =	29.93	in <sup>3</sup>
I <sub>y</sub> =	178.11	in <sup>4</sup>	S <sub>left</sub> =	28.06	in <sup>3</sup>	I <sub>y</sub> =	178.11	in <sup>4</sup>	S <sub>left</sub> =	28.06	in <sup>3</sup>
C <sub>right</sub> =	5.9519	in	A =	26.5025	in <sup>2</sup>	C <sub>right</sub> =	5.9519	in	A =	26.5025	in <sup>2</sup>
C <sub>left</sub> =	6.3481	in	r <sub>y</sub> =	2.5924	in	C <sub>left</sub> =	6.3481	in	r <sub>y</sub> =	2.5924	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	359.10 k-ft	359.10 k-ft
V	243.51 k	243.51 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x101	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	6.0000 in
$C_1 = d =$	14.6250 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	15.1250 in
$B_3 = t =$	0.5000 in	$Gap =$	0.5000 in

\*select from dropdown list

Coped Stringer S7-15 @ FB E3

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	14.7250	144.8940	0.5248	7.0971	495.6260	496.1508
	Web	6.9125	7.4125	51.2389	110.0992	0.2154	0.3208	110.4200
2	Horizontal Legs	5.5000	0.2500	1.3750	0.1146	7.3779	299.3856	299.5002
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.6279	128.5061	146.5061
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	7.1279	0.0000	0.0000
<b>Total</b>		<b>28.25</b>		<b>215.51</b>	<b>128.74</b>		<b>923.84</b>	<b>1052.58</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	7.6279	in	S <sub>top</sub> =	140.40	in <sup>3</sup>	y-bar =	7.6279	in	S <sub>top</sub> =	140.40	in <sup>3</sup>
I <sub>x</sub> =	1052.58	in <sup>4</sup>	S <sub>bottom</sub> =	137.99	in <sup>3</sup>	I <sub>x</sub> =	1052.58	in <sup>4</sup>	S <sub>bottom</sub> =	137.99	in <sup>3</sup>
C <sub>top</sub> =	7.4971	in	A =	28.2525	in <sup>2</sup>	C <sub>top</sub> =	7.4971	in	A =	28.2525	in <sup>2</sup>
C <sub>bottom</sub> =	7.6279	in	r <sub>x</sub> =	6.1038	in	C <sub>bottom</sub> =	7.6279	in	r <sub>x</sub> =	6.1038	in
J =	3.6336	in <sup>4</sup>	Z =	160.36	in <sup>3</sup>	Z =	160.36	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	6.2500	61.5000	124.0578	0.0000	0.0000	124.0578
	Web		6.9125	6.2500	43.2031	0.1440	0.0000	0.0000	0.1440
2 (Left)	Horizontal Leg		2.7500	2.7500	7.5625	6.9323	3.5000	33.6875	40.6198
	Vertical Leg		3.0000	5.7500	17.2500	0.0625	0.5000	0.7500	0.8125
2 (Right)	Horizontal Leg		2.7500	9.7500	26.8125	6.9323	3.5000	33.6875	40.6198
	Vertical Leg		3.0000	6.7500	20.2500	0.0625	0.5000	0.7500	0.8125
3	Additional Plate		0.0000	6.2500	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>28.25</b>		<b>176.58</b>	<b>138.19</b>		<b>68.88</b>	<b>207.07</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	6.2500	in	S <sub>right</sub> =	33.13	in <sup>3</sup>	x-bar =	6.2500	in	S <sub>right</sub> =	33.13	in <sup>3</sup>
I <sub>y</sub> =	207.07	in <sup>4</sup>	S <sub>left</sub> =	33.13	in <sup>3</sup>	I <sub>y</sub> =	207.07	in <sup>4</sup>	S <sub>left</sub> =	33.13	in <sup>3</sup>
C <sub>right</sub> =	6.2500	in	A =	28.2525	in <sup>2</sup>	C <sub>right</sub> =	6.2500	in	A =	28.2525	in <sup>2</sup>
C <sub>left</sub> =	6.2500	in	r <sub>y</sub> =	2.7072	in	C <sub>left</sub> =	6.2500	in	r <sub>y</sub> =	2.7072	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	413.97 k-ft	413.97 k-ft
V	259.17 k	259.17 k

F <sub>y</sub> =	36.00 ksi
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\*Noncompact Section





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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x101	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	6.0000 in
$C_1 = d =$	16.3750 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	16.8750 in
$B_3 = t =$	0.5000 in	$Gap =$	0.5000 in

\*select from dropdown list

Coped Stringer S7-15 @ FB E4

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	16.4750	162.1140	0.5248	8.0284	634.2416	634.7664
	Web	7.7875	8.2875	64.5389	157.4247	0.1591	0.1971	157.6218
2	Horizontal Legs	5.5000	0.2500	1.3750	0.1146	8.1966	369.5120	369.6266
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	5.4466	177.9917	195.9917
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	7.9466	0.0000	0.0000
<b>Total</b>		<b>29.13</b>		<b>246.03</b>	<b>176.06</b>		<b>1181.94</b>	<b>1358.01</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	8.4466 in	S <sub>top</sub> =	161.12 in <sup>3</sup>	y-bar =	8.4466 in	S <sub>top</sub> =	161.12 in <sup>3</sup>
I <sub>x</sub> =	1358.01 in <sup>4</sup>	S <sub>bott.</sub> =	160.78 in <sup>3</sup>	I <sub>x</sub> =	1358.01 in <sup>4</sup>	S <sub>bott.</sub> =	160.78 in <sup>3</sup>
C <sub>top</sub> =	8.4284 in	A =	29.1275 in <sup>2</sup>	C <sub>top</sub> =	8.4284 in	A =	29.1275 in <sup>2</sup>
C <sub>bottom</sub> =	8.4466 in	r <sub>x</sub> =	6.8281 in	C <sub>bottom</sub> =	8.4466 in	r <sub>x</sub> =	6.8281 in
J =	3.7065 in <sup>4</sup>	Z =	185.44 in <sup>3</sup>			Z =	185.44 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	6.2500	61.5000	124.0578	0.0000	0.0000	124.0578
	Web		7.7875	6.2500	48.6719	0.1622	0.0000	0.0000	0.1622
2 (Left)	Horizontal Leg		2.7500	2.7500	7.5625	6.9323	3.5000	33.6875	40.6198
	Vertical Leg		3.0000	5.7500	17.2500	0.0625	0.5000	0.7500	0.8125
2 (Right)	Horizontal Leg		2.7500	9.7500	26.8125	6.9323	3.5000	33.6875	40.6198
	Vertical Leg		3.0000	6.7500	20.2500	0.0625	0.5000	0.7500	0.8125
3	Additional Plate		0.0000	6.2500	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>29.13</b>		<b>182.05</b>	<b>138.21</b>		<b>68.88</b>	<b>207.08</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.2500 in	S <sub>right</sub> =	33.13 in <sup>3</sup>	x-bar =	6.2500 in	S <sub>right</sub> =	33.13 in <sup>3</sup>
I <sub>y</sub> =	207.08 in <sup>4</sup>	S <sub>left</sub> =	33.13 in <sup>3</sup>	I <sub>y</sub> =	207.08 in <sup>4</sup>	S <sub>left</sub> =	33.13 in <sup>3</sup>
C <sub>right</sub> =	6.2500 in	A =	29.1275 in <sup>2</sup>	C <sub>right</sub> =	6.2500 in	A =	29.1275 in <sup>2</sup>
C <sub>left</sub> =	6.2500 in	r <sub>y</sub> =	2.6664 in	C <sub>left</sub> =	6.2500 in	r <sub>y</sub> =	2.6664 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	482.33 k-ft	482.33 k-ft
V	277.44 k	277.44 k

F <sub>y</sub> =	36.00 ksi
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\*Noncompact Section



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Date 3/15/2012  
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Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section W21x101 Left Angle:

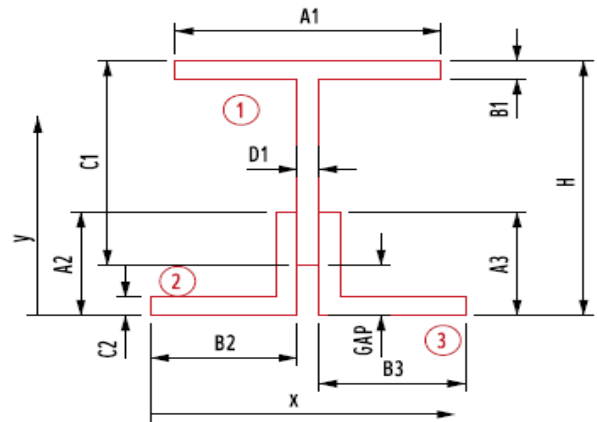
$A_1 = b_f = 12.3000$  in       $A_2 = L_v = 6.0000$  in  
 $B_1 = t_f = 0.8000$  in       $B_2 = L_h = 4.0000$  in  
 $C_1 = d = 19.0000$  in       $C_2 = t = 0.5000$  in

Right Angle:

$A_3 = L_v = 6.0000$  in  
 $B_3 = L_h = 6.0000$  in  
 $C_3 = t = 0.5000$  in

Miscellaneous:

$H = 19.2500$  in  
 Gap = 0.2500 in



**Coped Stringer S7-15 @ FB E5**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	18.8500	185.4840	0.5248	9.0099	798.7857	799.3105
	Web	9.1000	9.3500	85.0850	251.1903	0.4901	2.1862	253.3766
2	Horizontal Legs	1.7500	0.2500	0.4375	0.0365	9.5901	160.9492	160.9856
	Vertical Legs	3.0000	3.0000	9.0000	9.0000	6.8401	140.3629	149.3629
3	Horizontal Legs	2.7500	0.2500	0.6875	0.0573	9.5901	252.9202	252.9774
	Vertical Legs	3.0000	3.0000	9.0000	9.0000	6.8401	140.3629	149.3629
<b>Total</b>		<b>29.44</b>		<b>289.69</b>	<b>269.81</b>		<b>1495.57</b>	<b>1765.38</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	9.8401	in	S <sub>top</sub> =	187.61	in <sup>3</sup>	y-bar =	9.8401	in	S <sub>top</sub> =	187.61	in <sup>3</sup>
I <sub>x</sub> =	1765.38	in <sup>4</sup>	S <sub>bott.</sub> =	179.41	in <sup>3</sup>	I <sub>x</sub> =	1765.38	in <sup>4</sup>	S <sub>bott.</sub> =	179.41	in <sup>3</sup>
C <sub>top</sub> =	9.4099	in	A =	29.4400	in <sup>2</sup>	C <sub>top</sub> =	9.4099	in	A =	29.4400	in <sup>2</sup>
C <sub>bottom</sub> =	9.8401	in	r <sub>x</sub> =	7.7437	in	C <sub>bottom</sub> =	9.8401	in	r <sub>x</sub> =	7.7437	in
J =	3.7325	in <sup>4</sup>	Z =	180.00	in <sup>3</sup>	Z =	180.00	in <sup>3</sup>			



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Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	4.2500	41.8200	124.0578	0.1783	0.3129	124.3707
	Web		9.1000	4.2500	38.6750	0.1896	0.1783	0.2894	0.4790
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.6783	12.5535	14.3400
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.6783	1.3804	1.4429
3 (Right)	Horizontal Leg		2.7500	7.7500	21.3125	6.9323	3.3217	30.3421	37.2744
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	0.3217	0.3104	0.3729
<b>Total</b>			<b>29.44</b>		<b>130.37</b>	<b>133.09</b>		<b>45.19</b>	<b>178.28</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	4.4283	in	S <sub>right</sub> =	29.85	in <sup>3</sup>	x-bar =	4.4283	in	S <sub>right</sub> =	29.85	in <sup>3</sup>
I <sub>y</sub> =	178.28	in <sup>4</sup>	S <sub>left</sub> =	28.17	in <sup>3</sup>	I <sub>y</sub> =	178.28	in <sup>4</sup>	S <sub>left</sub> =	28.17	in <sup>3</sup>
C <sub>right</sub> =	5.9717	in	A =	29.4400	in <sup>2</sup>	C <sub>right</sub> =	5.9717	in	A =	29.4400	in <sup>2</sup>
C <sub>left</sub> =	6.3283	in	r <sub>y</sub> =	2.4608	in	C <sub>left</sub> =	6.3283	in	r <sub>y</sub> =	2.4608	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	540.00 k-ft	540.00 k-ft
V	304.85 k	304.85 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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Date 3/26/2012

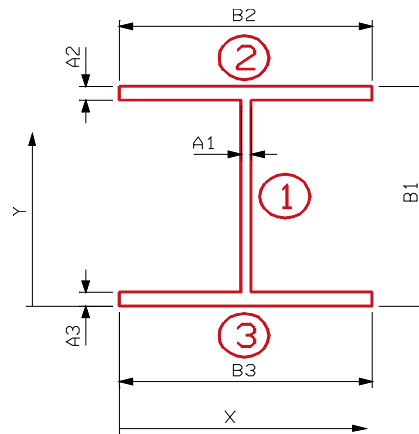
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 38.5313$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



Fascia Stringer F2A-15 Avg

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		13.8867	19.2656	267.5363	1586.9204	0.0000	0.0000	1586.9204
2	Top Flange		6.0000	38.1563	228.9375	0.2813	18.8906	2141.1343	2141.4155
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	18.8906	2141.1343	2141.4155
<b>Total</b>			<b>25.89</b>		<b>498.72</b>	<b>1587.48</b>		<b>4282.27</b>	<b>5869.75</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	19.2656	in	$S_{top} = 304.67$ in <sup>3</sup>	y-bar =	19.2656	in	$S_{top} = 304.67$ in <sup>3</sup>
$I_x =$	5869.75	n <sup>4</sup>	$S_{bott.} = 304.67$ in <sup>3</sup>	$I_x =$	5869.75	n <sup>4</sup>	$S_{bott.} = 304.67$ in <sup>3</sup>
$C_{top} =$	19.2656	in	$A = 25.8867$ in <sup>2</sup>	$C_{top} =$	19.2656	in	$A = 25.8867$ in <sup>2</sup>
$C_{bottom} =$	19.2656	in	$r_x = 15.0581$ in	$C_{bottom} =$	19.2656	in	$r_x = 15.0581$ in
J =	2.9009	in <sup>4</sup>	Z = 355.25 in <sup>3</sup>				Z = <b>355.25</b> in <sup>3</sup>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	13.8867	4.0000	55.5469	0.1627	0.0000	0.0000	0.1627
2	Top Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>		<b>25.89</b>		<b>103.55</b>	<b>64.16</b>		<b>0.00</b>	<b>64.16</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 16.04 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 16.04 in <sup>3</sup>
I <sub>y</sub> =	64.16	in <sup>4</sup>	S <sub>left</sub> = 16.04 in <sup>3</sup>	I <sub>y</sub> =	64.16	in <sup>4</sup>	S <sub>left</sub> = 16.04 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 25.8867 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 25.8867 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.5744 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.5744 in

Non-composite Capacities*		
	AB	AI
M	1065.74 k-ft	1065.74 k-ft
V	185.84 k	185.84 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/26/2012

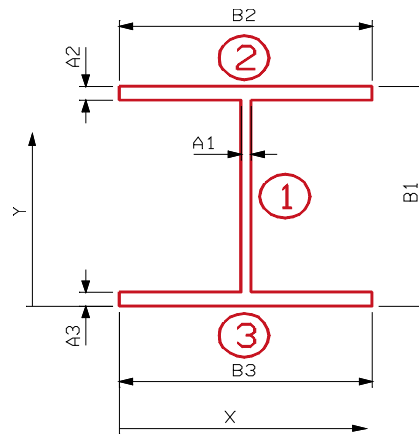
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 39.9688$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



Fascia Stringer F2B-15 Avg

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		14.4258	19.9844	288.2902	1778.9930	0.0000	0.0000	1778.9930
2	Top Flange		6.0000	39.5938	237.5625	0.2813	19.6094	2307.1655	2307.4468
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	19.6094	2307.1655	2307.4468
<b>Total</b>			<b>26.43</b>		<b>528.10</b>	<b>1779.56</b>		<b>4614.33</b>	<b>6393.89</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	19.9844	in	$S_{top} = 319.94$	$in^3$	y-bar =	19.9844	in	$S_{top} = 319.94$	$in^3$		
$I_x =$	6393.89	$in^4$	$S_{bottom} = 319.94$	$in^3$	$I_x =$	6393.89	$in^4$	$S_{bottom} = 319.94$	$in^3$		
$C_{top} =$	19.9844	in	A =	26.4258	$in^2$	$C_{top} =$	19.9844	in	A =	26.4258	$in^2$
$C_{bottom} =$	19.9844	in	$r_x =$	15.5549	in	$C_{bottom} =$	19.9844	in	$r_x =$	15.5549	in
J =	2.9262	$in^4$	Z =	374.05	$in^3$	Z =	374.05	$in^3$			



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Date 3/16/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	14.4258	4.0000	57.7031	0.1691	0.0000	0.0000	0.1691
2	Top Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>		<b>26.43</b>		<b>105.70</b>	<b>64.17</b>		<b>0.00</b>	<b>64.17</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000 in	S <sub>right</sub> =	16.04 in <sup>3</sup>	x-bar =	4.0000 in	S <sub>right</sub> =	16.04 in <sup>3</sup>
I <sub>y</sub> =	64.17 in <sup>4</sup>	S <sub>left</sub> =	16.04 in <sup>3</sup>	I <sub>y</sub> =	64.17 in <sup>4</sup>	S <sub>left</sub> =	16.04 in <sup>3</sup>
C <sub>right</sub> =	4.0000 in	A =	26.4258 in <sup>2</sup>	C <sub>right</sub> =	4.0000 in	A =	26.4258 in <sup>2</sup>
C <sub>left</sub> =	4.0000 in	r <sub>y</sub> =	1.5583 in	C <sub>left</sub> =	4.0000 in	r <sub>y</sub> =	1.5583 in

Non-composite Capacities*		
	AB	AI
M	959.83 k-ft	959.83 k-ft
V	178.89 k	178.89 k

\*Noncompact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear





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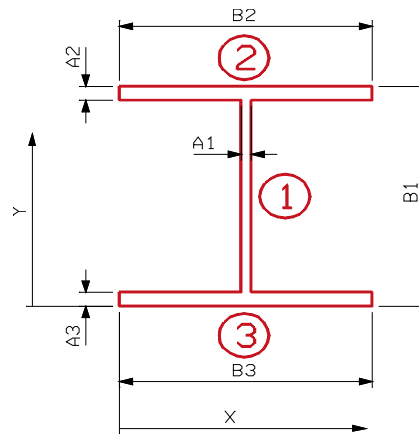
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 41.4688$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F2C-15 Avg**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		14.9883	20.7344	310.7726	1995.3162	0.0000	0.0000	1995.3162
2	Top Flange		6.0000	41.0938	246.5625	0.2813	20.3594	2487.0249	2487.3062
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	20.3594	2487.0249	2487.3062
<b>Total</b>			<b>26.99</b>		<b>559.59</b>	<b>1995.88</b>		<b>4974.05</b>	<b>6969.93</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	20.7344	in	$S_{top} = 336.15$	in <sup>3</sup>	y-bar =	20.7344	in	$S_{top} = 336.15$	in <sup>3</sup>		
$I_x =$	6969.93	in <sup>4</sup>	$S_{bottom} = 336.15$	in <sup>3</sup>	$I_x =$	6969.93	in <sup>4</sup>	$S_{bottom} = 336.15$	in <sup>3</sup>		
$C_{top} =$	20.7344	in	A =	26.9883	in <sup>2</sup>	$C_{top} =$	20.7344	in	A =	26.9883	in <sup>2</sup>
$C_{bottom} =$	20.7344	in	$r_x =$	16.0704	in	$C_{bottom} =$	20.7344	in	$r_x =$	16.0704	in
J =	2.9526	in <sup>4</sup>	Z =	394.08	in <sup>3</sup>	J =	2.9526	in <sup>4</sup>	Z =	394.08	in <sup>3</sup>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	14.9883	4.0000	59.9531	0.1756	0.0000	0.0000	0.1756
2	Top Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>		<b>26.99</b>		<b>107.95</b>	<b>64.18</b>		<b>0.00</b>	<b>64.18</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 16.04 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 16.04 in <sup>3</sup>
I <sub>y</sub> =	64.18	in <sup>4</sup>	S <sub>left</sub> = 16.04 in <sup>3</sup>	I <sub>y</sub> =	64.18	in <sup>4</sup>	S <sub>left</sub> = 16.04 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 26.9883 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 26.9883 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.5420 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.5420 in

Non-composite Capacities*		
	AB	AI
M	1008.46 k-ft	1008.46 k-ft
V	172.18 k	172.18 k

\*Noncompact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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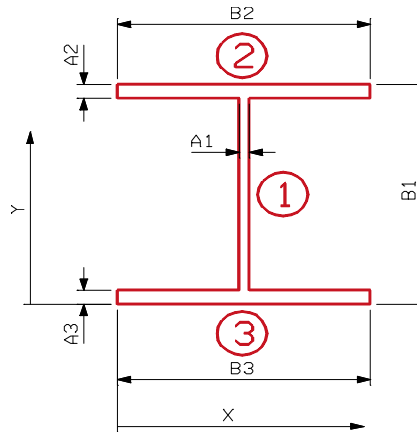
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 37.5938$  in
- $A_2 = t_f = 1.5000$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 1.5000$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F1-16 Avg**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		12.9727	18.7969	243.8454	1293.7279	0.0000	0.0000	1293.7279
2	Top Flange		12.0000	36.8438	442.1250	2.2500	18.0469	3908.2764	3910.5264
3	Bottom Flange		12.0000	0.7500	9.0000	2.2500	18.0469	3908.2764	3910.5264
<b>Total</b>			<b>36.97</b>		<b>694.97</b>	<b>1298.23</b>		<b>7816.55</b>	<b>9114.78</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	18.7969	in	$S_{top} = 484.91$	$in^3$	y-bar =	18.7969	in	$S_{top} = 484.91$	$in^3$		
$I_x =$	9114.78	$n^4$	$S_{bott.} = 484.91$	$in^3$	$I_x =$	9114.78	$n^4$	$S_{bott.} = 484.91$	$in^3$		
$C_{top} =$	18.7969	in	A =	36.9727	$in^2$	$C_{top} =$	18.7969	in	A =	36.9727	$in^2$
$C_{bottom} =$	18.7969	in	$r_x =$	15.7012	in	$C_{bottom} =$	18.7969	in	$r_x =$	15.7012	in
J =	18.6081	$in^4$	Z =	545.32	$in^3$	Z =	545.32	$in^3$			



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	12.9727	4.0000	51.8906	0.1520	0.0000	0.0000	0.1520
2	Top Flange	12.0000	4.0000	48.0000	64.0000	0.0000	0.0000	64.0000
3	Bottom Flange	12.0000	4.0000	48.0000	64.0000	0.0000	0.0000	64.0000
<b>Total</b>		<b>36.97</b>		<b>147.89</b>	<b>128.15</b>		<b>0.00</b>	<b>128.15</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 32.04 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 32.04 in <sup>3</sup>
I <sub>y</sub> =	128.15	in <sup>4</sup>	S <sub>left</sub> = 32.04 in <sup>3</sup>	I <sub>y</sub> =	128.15	in <sup>4</sup>	S <sub>left</sub> = 32.04 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 36.9727 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 36.9727 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.8618 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.8618 in

Non-composite Capacities*		
	AB	AI
M	1635.95 k-ft	1635.95 k-ft
V	198.93 k	198.93 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Job No. P402110046  
Sheet No. \_\_\_\_\_

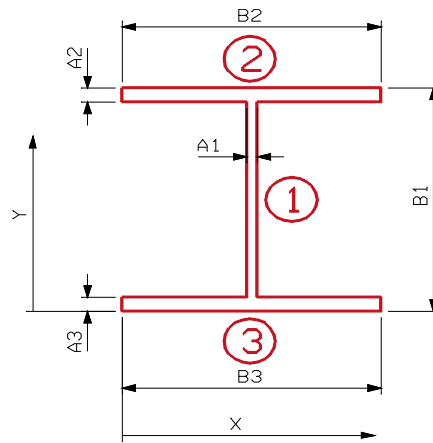
Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.7500$  in
- $B_1 = d = 18.9375$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 9.5000$  in
- $A_3 = t_f = 1.5000$  in
- $B_3 = b_f = 8.0000$  in

$d_o = n/a$  in

$d_o =$  stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F1-16 @ FB E6**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		12.5156	9.4688	118.5073	290.4383	1.2589	19.8348	310.2731
2	Top Flange		7.1250	18.5625	132.2578	0.3340	10.3526	763.6371	763.9710
3	Bottom Flange		12.0000	0.7500	9.0000	2.2500	7.4599	667.7943	670.0443
<b>Total</b>			<b>31.64</b>		<b>259.77</b>	<b>293.02</b>		<b>1451.27</b>	<b>1744.29</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	8.2099	in	$S_{top} = 162.60$	$in^3$	y-bar =	8.2099	in	$S_{top} = 162.60$	$in^3$		
$I_x =$	1744.29	$in^4$	$S_{bott.} = 212.46$	$in^3$	$I_x =$	1744.29	$in^4$	$S_{bott.} = 212.46$	$in^3$		
$C_{top} =$	10.7276	in	A =	31.6406	$in^2$	$C_{top} =$	10.7276	in	A =	31.6406	$in^2$
$C_{bottom} =$	8.2099	in	$r_x =$	7.4248	in	$C_{bottom} =$	8.2099	in	$r_x =$	7.4248	in
J =	12.6826	$in^4$	Z =	215.54	$in^3$	Z =	215.54	$in^3$			



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Date 3/16/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		12.5156	4.7500	59.4492	0.5867	0.0000	0.0000	0.5867
2	Top Flange		7.1250	4.7500	33.8438	53.5859	0.0000	0.0000	53.5859
3	Bottom Flange		12.0000	4.7500	57.0000	64.0000	0.0000	0.0000	64.0000
<b>Total</b>			<b>31.64</b>		<b>150.29</b>	<b>118.17</b>		<b>0.00</b>	<b>118.17</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.7500	in	S <sub>right</sub> = 24.88 in <sup>3</sup>	x-bar =	4.7500	in	S <sub>right</sub> = 24.88 in <sup>3</sup>
I <sub>y</sub> =	118.17	in <sup>4</sup>	S <sub>left</sub> = 24.88 in <sup>3</sup>	I <sub>y</sub> =	118.17	in <sup>4</sup>	S <sub>left</sub> = 24.88 in <sup>3</sup>
C <sub>right</sub> =	4.7500	in	A = 31.6406 in <sup>2</sup>	C <sub>right</sub> =	4.7500	in	A = 31.6406 in <sup>2</sup>
C <sub>left</sub> =	4.7500	in	r <sub>y</sub> = 1.9326 in	C <sub>left</sub> =	4.7500	in	r <sub>y</sub> = 1.9326 in

Non-composite Capacities*		
	AB	AI
M	646.61 k-ft	646.61 k-ft
V	261.33 k	261.33 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W24x94	<b>Bottom Angles:</b>
$A_1 = b_f =$	9.0700 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.8750 in	$B_2 = L_h =$ 4.0000 in
$C_1 = d =$	14.7500 in	$C_2 = t =$ 0.5000 in
$D_1 = t_w =$	0.5150 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	H = 15.1250 in
$B_3 = t =$	0.5150 in	Gap = 0.3750 in

\*select from dropdown list

Coped Stringer S1-16 @ FB E5

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	7.9363	14.6875	116.5637	0.5063	7.0522	394.6928	395.1992
	Web	7.1456	7.3125	52.2524	114.6370	0.3228	0.7448	115.3818
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	7.3853	190.9015	190.9745
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.6353	128.9184	146.9184
3	Additional Plate	0.0000	0.3750	0.0000	0.0000	7.2603	0.0000	0.0000
<b>Total</b>		<b>24.58</b>		<b>187.69</b>	<b>133.22</b>		<b>715.26</b>	<b>848.47</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	7.6353 in	S <sub>top</sub> =	113.29 in <sup>3</sup>	y-bar =	7.6353 in	S <sub>top</sub> =	113.29 in <sup>3</sup>
I <sub>x</sub> =	848.47 in <sup>4</sup>	S <sub>bottom</sub> =	111.12 in <sup>3</sup>	I <sub>x</sub> =	848.47 in <sup>4</sup>	S <sub>bottom</sub> =	111.12 in <sup>3</sup>
C <sub>top</sub> =	7.4897 in	A =	24.5819 in <sup>2</sup>	C <sub>top</sub> =	7.4897 in	A =	24.5819 in <sup>2</sup>
C <sub>bottom</sub> =	7.6353 in	r <sub>x</sub> =	5.8751 in	C <sub>bottom</sub> =	7.6353 in	r <sub>x</sub> =	5.8751 in
J =	3.4488 in <sup>4</sup>	Z =	132.74 in <sup>3</sup>	Z =	132.74 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		7.9363	4.2575	33.7886	54.4062	0.2775	0.6111	55.0174
	Web		7.1456	4.2575	30.4225	0.1579	0.2775	0.5503	0.7082
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.7850	13.5734	15.3599
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.7850	1.8487	1.9112
2 (Right)	Horizontal Leg		1.7500	6.7650	11.8388	1.7865	2.2300	8.7026	10.4890
	Vertical Leg		3.0000	4.7650	14.2950	0.0625	0.2300	0.1587	0.2212
3	Additional Plate		0.0000	4.2575	0.0000	0.0000	0.2775	0.0000	0.0000
<b>Total</b>			<b>24.58</b>		<b>104.66</b>	<b>58.26</b>		<b>25.44</b>	<b>83.71</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.5350 in	S <sub>right</sub> =	18.46 in <sup>3</sup>	x-bar =	4.5350 in	S <sub>right</sub> =	18.46 in <sup>3</sup>
I <sub>y</sub> =	83.71 in <sup>4</sup>	S <sub>left</sub> =	18.46 in <sup>3</sup>	I <sub>y</sub> =	83.71 in <sup>4</sup>	S <sub>left</sub> =	18.46 in <sup>3</sup>
C <sub>right</sub> =	4.5350 in	A =	24.5819 in <sup>2</sup>	C <sub>right</sub> =	4.5350 in	A =	24.5819 in <sup>2</sup>
C <sub>left</sub> =	4.5350 in	r <sub>y</sub> =	1.8453 in	C <sub>left</sub> =	4.5350 in	r <sub>y</sub> =	1.8453 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	398.22 k-ft	398.22 k-ft
V	264.04 k	264.04 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<u>Partial W-Section*</u>	W24x94	<u>Bottom Angles:</u>	
$A_1 = b_f =$	9.0700 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8750 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	12.2500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5150 in		



<u>Additional Plate:</u>		<u>Miscellaneous:</u>	
$A_3 = d =$	0.0000 in	H =	12.6875 in
$B_3 = t =$	0.5150 in	Gap =	0.4375 in

\*select from dropdown list

Coped Stringer S1-16 @ FB E6

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	7.9363	12.2500	97.2191	0.5063	5.7259	260.1964	260.7027
	Web	5.8581	6.1250	35.8810	63.1655	0.3991	0.9331	64.0987
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.2741	137.7756	137.8485
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.5241	74.5161	92.5161
3	Additional Plate	0.0000	0.4375	0.0000	0.0000	6.0866	0.0000	0.0000
<b>Total</b>		<b>23.29</b>		<b>151.98</b>	<b>81.74</b>		<b>473.42</b>	<b>555.17</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.5241 in	S <sub>top</sub> =	90.07 in <sup>3</sup>	y-bar =	6.5241 in	S <sub>top</sub> =	90.07 in <sup>3</sup>
I <sub>x</sub> =	555.17 in <sup>4</sup>	S <sub>bott.</sub> =	85.09 in <sup>3</sup>	I <sub>x</sub> =	555.17 in <sup>4</sup>	S <sub>bott.</sub> =	85.09 in <sup>3</sup>
C <sub>top</sub> =	6.1634 in	A =	23.2944 in <sup>2</sup>	C <sub>top</sub> =	6.1634 in	A =	23.2944 in <sup>2</sup>
C <sub>bottom</sub> =	6.5241 in	r <sub>x</sub> =	4.8819 in	C <sub>bottom</sub> =	6.5241 in	r <sub>x</sub> =	4.8819 in
J =	3.3350 in <sup>4</sup>	Z =	104.05 in <sup>3</sup>			Z =	104.05 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		7.9363	4.2575	33.7886	54.4062	0.2775	0.6111	55.0174
	Web		5.8581	4.2575	24.9410	0.1295	0.2775	0.4511	0.5806
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.7850	13.5734	15.3599
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.7850	1.8487	1.9112
2 (Right)	Horizontal Leg		1.7500	6.7650	11.8388	1.7865	2.2300	8.7026	10.4890
	Vertical Leg		3.0000	4.7650	14.2950	0.0625	0.2300	0.1587	0.2212
3	Additional Plate		0.0000	4.2575	0.0000	0.0000	0.2775	0.0000	0.0000
<b>Total</b>			<b>23.29</b>		<b>99.18</b>	<b>58.23</b>		<b>25.35</b>	<b>83.58</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.5350 in	S <sub>right</sub> =	18.43 in <sup>3</sup>	x-bar =	4.5350 in	S <sub>right</sub> =	18.43 in <sup>3</sup>
I <sub>y</sub> =	83.58 in <sup>4</sup>	S <sub>left</sub> =	18.43 in <sup>3</sup>	I <sub>y</sub> =	83.58 in <sup>4</sup>	S <sub>left</sub> =	18.43 in <sup>3</sup>
C <sub>right</sub> =	4.5350 in	A =	23.2944 in <sup>2</sup>	C <sub>right</sub> =	4.5350 in	A =	23.2944 in <sup>2</sup>
C <sub>left</sub> =	4.5350 in	r <sub>y</sub> =	1.8942 in	C <sub>left</sub> =	4.5350 in	r <sub>y</sub> =	1.8942 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	312.15 k-ft	312.15 k-ft
V	237.16 k	237.16 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W24x94	<b>Bottom Angles:</b>
$A_1 = b_f =$	9.0700 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.8750 in	$B_2 = L_h =$ 4.0000 in
$C_1 = d =$	15.5000 in	$C_2 = t =$ 0.5000 in
$D_1 = t_w =$	0.5150 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	H = 15.7500 in
$B_3 = t =$	0.5150 in	Gap = 0.2500 in

\*select from dropdown list

Coped Stringer S2-16 @ FB E5

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	7.9363	15.3125	121.5238	0.5063	7.4081	435.5382	436.0446
	Web	7.5319	7.5625	56.9598	134.2498	0.3419	0.8806	135.1304
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	7.6544	205.0657	205.1386
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.9044	144.3202	162.3202
3	Additional Plate	0.0000	0.2500	0.0000	0.0000	7.6544	0.0000	0.0000
<b>Total</b>		<b>24.97</b>		<b>197.36</b>	<b>152.83</b>		<b>785.80</b>	<b>938.63</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	7.9044 in	S <sub>top</sub> =	119.64 in <sup>3</sup>	y-bar =	7.9044 in	S <sub>top</sub> =	119.64 in <sup>3</sup>
I <sub>x</sub> =	938.63 in <sup>4</sup>	S <sub>bott.</sub> =	118.75 in <sup>3</sup>	I <sub>x</sub> =	938.63 in <sup>4</sup>	S <sub>bott.</sub> =	118.75 in <sup>3</sup>
C <sub>top</sub> =	7.8456 in	A =	24.9681 in <sup>2</sup>	C <sub>top</sub> =	7.8456 in	A =	24.9681 in <sup>2</sup>
C <sub>bottom</sub> =	7.9044 in	r <sub>x</sub> =	6.1313 in	C <sub>bottom</sub> =	7.9044 in	r <sub>x</sub> =	6.1313 in
J =	3.4829 in <sup>4</sup>	Z =	140.83 in <sup>3</sup>			Z =	140.83 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		7.9363	4.2575	33.7886	54.4062	0.2775	0.6111	55.0174
	Web		7.5319	4.2575	32.0670	0.1665	0.2775	0.5800	0.7465
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.7850	13.5734	15.3599
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.7850	1.8487	1.9112
2 (Right)	Horizontal Leg		1.7500	6.7650	11.8388	1.7865	2.2300	8.7026	10.4890
	Vertical Leg		3.0000	4.7650	14.2950	0.0625	0.2300	0.1587	0.2212
3	Additional Plate		0.0000	4.2575	0.0000	0.0000	0.2775	0.0000	0.0000
<b>Total</b>			<b>24.97</b>		<b>106.30</b>	<b>58.27</b>		<b>25.47</b>	<b>83.75</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.5350 in	S <sub>right</sub> =	18.47 in <sup>3</sup>	x-bar =	4.5350 in	S <sub>right</sub> =	18.47 in <sup>3</sup>
I <sub>y</sub> =	83.75 in <sup>4</sup>	S <sub>left</sub> =	18.47 in <sup>3</sup>	I <sub>y</sub> =	83.75 in <sup>4</sup>	S <sub>left</sub> =	18.47 in <sup>3</sup>
C <sub>right</sub> =	4.5350 in	A =	24.9681 in <sup>2</sup>	C <sub>right</sub> =	4.5350 in	A =	24.9681 in <sup>2</sup>
C <sub>left</sub> =	4.5350 in	r <sub>y</sub> =	1.8314 in	C <sub>left</sub> =	4.5350 in	r <sub>y</sub> =	1.8314 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	422.49 k-ft	422.49 k-ft
V	272.11 k	272.11 k

F<sub>y</sub> = 36.00 ksi

\*Compact Section



Made By CTG  
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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W24x94	<b>Bottom Angles:</b>	
$A_1 = b_f =$	9.0700 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8750 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	12.7500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5150 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	13.1875 in
$B_3 = t =$	0.5150 in	$Gap =$	0.4375 in

\*select from dropdown list

Coped Stringer S2-16 @ FB E6

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	7.9363	12.7500	101.1872	0.5063	5.9969	285.4053	285.9116
	Web	6.1156	6.3750	38.9871	71.8666	0.3781	0.8745	72.7411
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.5031	148.0183	148.0912
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.7531	84.5167	102.5167
3	Additional Plate	0.0000	0.4375	0.0000	0.0000	6.3156	0.0000	0.0000
<b>Total</b>		<b>23.55</b>		<b>159.05</b>	<b>90.45</b>		<b>518.81</b>	<b>609.26</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.7531 in	S <sub>top</sub> =	94.69 in <sup>3</sup>	y-bar =	6.7531 in	S <sub>top</sub> =	94.69 in <sup>3</sup>
I <sub>x</sub> =	609.26 in <sup>4</sup>	S <sub>bott.</sub> =	90.22 in <sup>3</sup>	I <sub>x</sub> =	609.26 in <sup>4</sup>	S <sub>bott.</sub> =	90.22 in <sup>3</sup>
C <sub>top</sub> =	6.4344 in	A =	23.5519 in <sup>2</sup>	C <sub>top</sub> =	6.4344 in	A =	23.5519 in <sup>2</sup>
C <sub>bottom</sub> =	6.7531 in	r <sub>x</sub> =	5.0861 in	C <sub>bottom</sub> =	6.7531 in	r <sub>x</sub> =	5.0861 in
J =	3.3577 in <sup>4</sup>	Z =	109.69 in <sup>3</sup>			Z =	109.69 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		7.9363	4.2575	33.7886	54.4062	0.2775	0.6111	55.0174
	Web		6.1156	4.2575	26.0373	0.1352	0.2775	0.4709	0.6061
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.7850	13.5734	15.3599
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.7850	1.8487	1.9112
2 (Right)	Horizontal Leg		1.7500	6.7650	11.8388	1.7865	2.2300	8.7026	10.4890
	Vertical Leg		3.0000	4.7650	14.2950	0.0625	0.2300	0.1587	0.2212
3	Additional Plate		0.0000	4.2575	0.0000	0.0000	0.2775	0.0000	0.0000
<b>Total</b>			<b>23.55</b>		<b>100.27</b>	<b>58.24</b>		<b>25.37</b>	<b>83.60</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.5350 in	S <sub>right</sub> =	18.44 in <sup>3</sup>	x-bar =	4.5350 in	S <sub>right</sub> =	18.44 in <sup>3</sup>
I <sub>y</sub> =	83.60 in <sup>4</sup>	S <sub>left</sub> =	18.44 in <sup>3</sup>	I <sub>y</sub> =	83.60 in <sup>4</sup>	S <sub>left</sub> =	18.44 in <sup>3</sup>
C <sub>right</sub> =	4.5350 in	A =	23.5519 in <sup>2</sup>	C <sub>right</sub> =	4.5350 in	A =	23.5519 in <sup>2</sup>
C <sub>left</sub> =	4.5350 in	r <sub>y</sub> =	1.8841 in	C <sub>left</sub> =	4.5350 in	r <sub>y</sub> =	1.8841 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	329.07 k-ft	329.07 k-ft
V	242.53 k	242.53 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



Made By CTG  
Checked By DMP

Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W24x94	<b>Bottom Angles:</b>
$A_1 = b_f =$	9.0700 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.8750 in	$B_2 = L_h =$ 4.0000 in
$C_1 = d =$	17.2500 in	$C_2 = t =$ 0.5000 in
$D_1 = t_w =$	0.5150 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	$H =$ 17.6875 in
$B_3 = t =$	0.5150 in	$GAP =$ 0.4375 in

\*select from dropdown list

Coped Stringer S3-16 @ FB E5

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	7.9363	17.2500	136.9003	0.5063	8.4167	562.2154	562.7218
	Web	8.4331	8.6250	72.7357	188.4386	0.2083	0.3658	188.8044
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	8.5833	257.8535	257.9264
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	5.8333	204.1618	222.1618
3	Additional Plate	0.0000	0.4375	0.0000	0.0000	8.3958	0.0000	0.0000
<b>Total</b>		<b>25.87</b>		<b>228.51</b>	<b>207.02</b>		<b>1024.60</b>	<b>1231.61</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



Made By CTG  
Checked By DMP

Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	8.8333 in	S <sub>top</sub> =	139.10 in <sup>3</sup>	y-bar =	8.8333 in	S <sub>top</sub> =	139.10 in <sup>3</sup>
I <sub>x</sub> =	1231.61 in <sup>4</sup>	S <sub>bottom</sub> =	139.43 in <sup>3</sup>	I <sub>x</sub> =	1231.61 in <sup>4</sup>	S <sub>bottom</sub> =	139.43 in <sup>3</sup>
C <sub>top</sub> =	8.8542 in	A =	25.8694 in <sup>2</sup>	C <sub>top</sub> =	8.8542 in	A =	25.8694 in <sup>2</sup>
C <sub>bottom</sub> =	8.8333 in	r <sub>x</sub> =	6.8999 in	C <sub>bottom</sub> =	8.8333 in	r <sub>x</sub> =	6.8999 in
J =	3.5626 in <sup>4</sup>	Z =	164.85 in <sup>3</sup>	Z =	164.85 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		7.9363	4.2575	33.7886	54.4062	0.2775	0.6111	55.0174
	Web		8.4331	4.2575	35.9040	0.1864	0.2775	0.6494	0.8358
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.7850	13.5734	15.3599
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.7850	1.8487	1.9112
2 (Right)	Horizontal Leg		1.7500	6.7650	11.8388	1.7865	2.2300	8.7026	10.4890
	Vertical Leg		3.0000	4.7650	14.2950	0.0625	0.2300	0.1587	0.2212
3	Additional Plate		0.0000	4.2575	0.0000	0.0000	0.2775	0.0000	0.0000
<b>Total</b>			<b>25.87</b>		<b>110.14</b>	<b>58.29</b>		<b>25.54</b>	<b>83.83</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.5350 in	S <sub>right</sub> =	18.49 in <sup>3</sup>	x-bar =	4.5350 in	S <sub>right</sub> =	18.49 in <sup>3</sup>
I <sub>y</sub> =	83.83 in <sup>4</sup>	S <sub>left</sub> =	18.49 in <sup>3</sup>	I <sub>y</sub> =	83.83 in <sup>4</sup>	S <sub>left</sub> =	18.49 in <sup>3</sup>
C <sub>right</sub> =	4.5350 in	A =	25.8694 in <sup>2</sup>	C <sub>right</sub> =	4.5350 in	A =	25.8694 in <sup>2</sup>
C <sub>left</sub> =	4.5350 in	r <sub>y</sub> =	1.8002 in	C <sub>left</sub> =	4.5350 in	r <sub>y</sub> =	1.8002 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	494.55 k-ft	494.55 k-ft
V	290.92 k	290.92 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





Made By CTG  
Checked By DMP

Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W24x94	<b>Bottom Angles:</b>
$A_1 = b_f =$	9.0700 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.8750 in	$B_2 = L_h =$ 4.0000 in
$C_1 = d =$	14.8750 in	$C_2 = t =$ 0.5000 in
$D_1 = t_w =$	0.5150 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	$H =$ 15.3750 in
$B_3 = t =$	0.5150 in	$Gap =$ 0.5000 in

\*select from dropdown list

Coped Stringer S3-16 @ FB E6

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	7.9363	14.9375	118.5477	0.5063	7.1676	407.7262	408.2325
	Web	7.2100	7.5000	54.0750	117.7633	0.2699	0.5250	118.2884
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	7.5199	197.9187	197.9916
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.7699	136.5090	154.5090
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	7.2699	0.0000	0.0000
<b>Total</b>		<b>24.65</b>		<b>191.50</b>	<b>136.34</b>		<b>742.68</b>	<b>879.02</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	7.7699 in	S <sub>top</sub> =	115.58 in <sup>3</sup>	y-bar =	7.7699 in	S <sub>top</sub> =	115.58 in <sup>3</sup>
I <sub>x</sub> =	879.02 in <sup>4</sup>	S <sub>bottom</sub> =	113.13 in <sup>3</sup>	I <sub>x</sub> =	879.02 in <sup>4</sup>	S <sub>bottom</sub> =	113.13 in <sup>3</sup>
C <sub>top</sub> =	7.6051 in	A =	24.6463 in <sup>2</sup>	C <sub>top</sub> =	7.6051 in	A =	24.6463 in <sup>2</sup>
C <sub>bottom</sub> =	7.7699 in	r <sub>x</sub> =	5.9721 in	C <sub>bottom</sub> =	7.7699 in	r <sub>x</sub> =	5.9721 in
J =	3.4545 in <sup>4</sup>	Z =	135.45 in <sup>3</sup>			Z =	135.45 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		7.9363	4.2575	33.7886	54.4062	0.2775	0.6111	55.0174
	Web		7.2100	4.2575	30.6966	0.1594	0.2775	0.5552	0.7146
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	2.7850	13.5734	15.3599
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	0.7850	1.8487	1.9112
2 (Right)	Horizontal Leg		1.7500	6.7650	11.8388	1.7865	2.2300	8.7026	10.4890
	Vertical Leg		3.0000	4.7650	14.2950	0.0625	0.2300	0.1587	0.2212
3	Additional Plate		0.0000	4.2575	0.0000	0.0000	0.2775	0.0000	0.0000
<b>Total</b>			<b>24.65</b>		<b>104.93</b>	<b>58.26</b>		<b>25.45</b>	<b>83.71</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.5350 in	S <sub>right</sub> =	18.46 in <sup>3</sup>	x-bar =	4.5350 in	S <sub>right</sub> =	18.46 in <sup>3</sup>
I <sub>y</sub> =	83.71 in <sup>4</sup>	S <sub>left</sub> =	18.46 in <sup>3</sup>	I <sub>y</sub> =	83.71 in <sup>4</sup>	S <sub>left</sub> =	18.46 in <sup>3</sup>
C <sub>right</sub> =	4.5350 in	A =	24.6463 in <sup>2</sup>	C <sub>right</sub> =	4.5350 in	A =	24.6463 in <sup>2</sup>
C <sub>left</sub> =	4.5350 in	r <sub>y</sub> =	1.8430 in	C <sub>left</sub> =	4.5350 in	r <sub>y</sub> =	1.8430 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	406.35 k-ft	406.35 k-ft
V	265.38 k	265.38 k

F<sub>y</sub> = 36.00 ksi

\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W24x104	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.8000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7500 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	18.0000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	18.3125 in
$B_3 = t =$	0.5000 in	$GAP =$	0.3125 in

\*select from dropdown list

Coped Stringer S4-16 @ FB E5

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6000	17.9375	172.2000	0.4500	8.2653	655.8304	656.2804
	Web	8.6250	8.9375	77.0859	213.8730	0.7347	4.6553	218.5283
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	9.4222	310.7206	310.7935
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	6.6722	267.1072	285.1072
3	Additional Plate	0.0000	0.3125	0.0000	0.0000	9.3597	0.0000	0.0000
<b>Total</b>		<b>27.73</b>		<b>268.16</b>	<b>232.40</b>		<b>1238.31</b>	<b>1470.71</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	9.6722 in	S <sub>top</sub> =	170.21 in <sup>3</sup>	y-bar =	9.6722 in	S <sub>top</sub> =	170.21 in <sup>3</sup>
I <sub>x</sub> =	1470.71 in <sup>4</sup>	S <sub>bott.</sub> =	152.06 in <sup>3</sup>	I <sub>x</sub> =	1470.71 in <sup>4</sup>	S <sub>bott.</sub> =	152.06 in <sup>3</sup>
C <sub>top</sub> =	8.6403 in	A =	27.7250 in <sup>2</sup>	C <sub>top</sub> =	8.6403 in	A =	27.7250 in <sup>2</sup>
C <sub>bottom</sub> =	9.6722 in	r <sub>x</sub> =	7.2833 in	C <sub>bottom</sub> =	9.6722 in	r <sub>x</sub> =	7.2833 in
J =	3.3104 in <sup>4</sup>	Z =	189.62 in <sup>3</sup>			Z =	189.62 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6000	4.2500	40.8000	131.0720	2.1500	44.3760	175.4480
	Web		8.6250	4.2500	36.6563	0.1797	2.1500	39.8691	40.0488
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.6500	37.8394	39.6258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.6500	21.0675	21.1300
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.3500	0.2144	2.0008
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.6500	8.1675	8.2300
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	2.1500	0.0000	0.0000
<b>Total</b>			<b>27.73</b>		<b>117.83</b>	<b>134.95</b>		<b>151.53</b>	<b>286.48</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.4000 in	S <sub>right</sub> =	44.76 in <sup>3</sup>	x-bar =	6.4000 in	S <sub>right</sub> =	44.76 in <sup>3</sup>
I <sub>y</sub> =	286.48 in <sup>4</sup>	S <sub>left</sub> =	44.76 in <sup>3</sup>	I <sub>y</sub> =	286.48 in <sup>4</sup>	S <sub>left</sub> =	44.76 in <sup>3</sup>
C <sub>right</sub> =	6.4000 in	A =	27.7250 in <sup>2</sup>	C <sub>right</sub> =	6.4000 in	A =	27.7250 in <sup>2</sup>
C <sub>left</sub> =	6.4000 in	r <sub>y</sub> =	3.2145 in	C <sub>left</sub> =	6.4000 in	r <sub>y</sub> =	3.2145 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	568.86 k-ft	568.86 k-ft
V	294.93 k	294.93 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section*	W24x104	Bottom Angles:	
$A_1 = b_f =$	12.8000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7500 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	15.3750 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	15.8750 in
$B_3 = t =$	0.5000 in	Gap =	0.5000 in

\*select from dropdown list

Coped Stringer S4-16 @ FB E6

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6000	15.5000	148.8000	0.4500	6.9887	468.8866	469.3366
	Web	7.3125	7.8125	57.1289	130.3396	0.6988	3.5705	133.9101
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	8.2613	238.8700	238.9429
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	5.5113	182.2446	200.2446
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	8.0113	0.0000	0.0000
<b>Total</b>		<b>26.41</b>		<b>224.80</b>	<b>148.86</b>		<b>893.57</b>	<b>1042.43</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	8.5113	in	S <sub>top</sub> =	141.56	in <sup>3</sup>	y-bar =	8.5113	in	S <sub>top</sub> =	141.56	in <sup>3</sup>
I <sub>x</sub> =	1042.43	in <sup>4</sup>	S <sub>bottom</sub> =	122.48	in <sup>3</sup>	I <sub>x</sub> =	1042.43	in <sup>4</sup>	S <sub>bottom</sub> =	122.48	in <sup>3</sup>
C <sub>top</sub> =	7.3637	in	A =	26.4125	in <sup>2</sup>	C <sub>top</sub> =	7.3637	in	A =	26.4125	in <sup>2</sup>
C <sub>bottom</sub> =	8.5113	in	r <sub>x</sub> =	6.2823	in	C <sub>bottom</sub> =	8.5113	in	r <sub>x</sub> =	6.2823	in
J =	3.2010	in <sup>4</sup>	Z =	155.88	in <sup>3</sup>	Z =	155.88	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6000	4.2500	40.8000	131.0720	2.1500	44.3760	175.4480
	Web		7.3125	4.2500	31.0781	0.1523	2.1500	33.8020	33.9544
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.6500	37.8394	39.6258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.6500	21.0675	21.1300
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.3500	0.2144	2.0008
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.6500	8.1675	8.2300
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	2.1500	0.0000	0.0000
<b>Total</b>			<b>26.41</b>		<b>112.25</b>	<b>134.92</b>		<b>145.47</b>	<b>280.39</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	6.4000	in	S <sub>right</sub> =	43.81	in <sup>3</sup>	x-bar =	6.4000	in	S <sub>right</sub> =	43.81	in <sup>3</sup>
I <sub>y</sub> =	280.39	in <sup>4</sup>	S <sub>left</sub> =	43.81	in <sup>3</sup>	I <sub>y</sub> =	280.39	in <sup>4</sup>	S <sub>left</sub> =	43.81	in <sup>3</sup>
C <sub>right</sub> =	6.4000	in	A =	26.4125	in <sup>2</sup>	C <sub>right</sub> =	6.4000	in	A =	26.4125	in <sup>2</sup>
C <sub>left</sub> =	6.4000	in	r <sub>y</sub> =	3.2582	in	C <sub>left</sub> =	6.4000	in	r <sub>y</sub> =	3.2582	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	467.64 k-ft	467.64 k-ft
V	267.53 k	267.53 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W24x104	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.8000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7500 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	18.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	18.8750 in
$B_3 = t =$	0.5000 in	$Gap =$	0.3750 in

\*select from dropdown list

Coped Stringer S5-16 @ FB E5

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6000	18.5000	177.6000	0.4500	8.5422	700.5083	700.9583
	Web	8.8750	9.2500	82.0938	233.0150	0.7078	4.4459	237.4609
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	9.7078	329.8431	329.9160
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	6.9578	290.4638	308.4638
3	Additional Plate	0.0000	0.3750	0.0000	0.0000	9.5828	0.0000	0.0000
<b>Total</b>		<b>27.98</b>		<b>278.57</b>	<b>251.54</b>		<b>1325.26</b>	<b>1576.80</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	9.9578 in	S <sub>top</sub> =	176.83 in <sup>3</sup>	y-bar =	9.9578 in	S <sub>top</sub> =	176.83 in <sup>3</sup>
I <sub>x</sub> =	1576.80 in <sup>4</sup>	S <sub>bottom</sub> =	158.35 in <sup>3</sup>	I <sub>x</sub> =	1576.80 in <sup>4</sup>	S <sub>bottom</sub> =	158.35 in <sup>3</sup>
C <sub>top</sub> =	8.9172 in	A =	27.9750 in <sup>2</sup>	C <sub>top</sub> =	8.9172 in	A =	27.9750 in <sup>2</sup>
C <sub>bottom</sub> =	9.9578 in	r <sub>x</sub> =	7.5076 in	C <sub>bottom</sub> =	9.9578 in	r <sub>x</sub> =	7.5076 in
J =	3.3313 in <sup>4</sup>	Z =	197.18 in <sup>3</sup>	Z =	197.18 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6000	4.2500	40.8000	131.0720	2.1500	44.3760	175.4480
	Web		8.8750	4.2500	37.7188	0.1849	2.1500	41.0247	41.2096
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.6500	37.8394	39.6258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.6500	21.0675	21.1300
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.3500	0.2144	2.0008
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.6500	8.1675	8.2300
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	2.1500	0.0000	0.0000
<b>Total</b>			<b>27.98</b>		<b>118.89</b>	<b>134.95</b>		<b>152.69</b>	<b>287.64</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.4000 in	S <sub>right</sub> =	44.94 in <sup>3</sup>	x-bar =	6.4000 in	S <sub>right</sub> =	44.94 in <sup>3</sup>
I <sub>y</sub> =	287.64 in <sup>4</sup>	S <sub>left</sub> =	44.94 in <sup>3</sup>	I <sub>y</sub> =	287.64 in <sup>4</sup>	S <sub>left</sub> =	44.94 in <sup>3</sup>
C <sub>right</sub> =	6.4000 in	A =	27.9750 in <sup>2</sup>	C <sub>right</sub> =	6.4000 in	A =	27.9750 in <sup>2</sup>
C <sub>left</sub> =	6.4000 in	r <sub>y</sub> =	3.2066 in	C <sub>left</sub> =	6.4000 in	r <sub>y</sub> =	3.2066 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	591.54 k-ft	591.54 k-ft
V	300.15 k	300.15 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section*	W24x104	Bottom Angles:	
$A_1 = b_f =$	12.8000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7500 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	16.1250 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	16.6250 in
$B_3 = t =$	0.5000 in	Gap =	0.5000 in

\*select from dropdown list

Coped Stringer S5-16 @ FB E6

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6000	16.2500	156.0000	0.4500	7.3721	521.7412	522.1912
	Web	7.6875	8.1875	62.9414	151.4377	0.6904	3.6641	155.1019
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	8.6279	260.5415	260.6145
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	5.8779	207.2974	225.2974
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	8.3779	0.0000	0.0000
<b>Total</b>		<b>26.79</b>		<b>237.82</b>	<b>169.96</b>		<b>993.24</b>	<b>1163.20</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	8.8779	in	S <sub>top</sub> =	150.15	in <sup>3</sup>	y-bar =	8.8779	in	S <sub>top</sub> =	150.15	in <sup>3</sup>
I <sub>x</sub> =	1163.20	in <sup>4</sup>	S <sub>bot.</sub> =	131.02	in <sup>3</sup>	I <sub>x</sub> =	1163.20	in <sup>4</sup>	S <sub>bot.</sub> =	131.02	in <sup>3</sup>
C <sub>top</sub> =	7.7471	in	A =	26.7875	in <sup>2</sup>	C <sub>top</sub> =	7.7471	in	A =	26.7875	in <sup>2</sup>
C <sub>bottom</sub> =	8.8779	in	r <sub>x</sub> =	6.5896	in	C <sub>bottom</sub> =	8.8779	in	r <sub>x</sub> =	6.5896	in
J =	3.2323	in <sup>4</sup>	Z =	165.85	in <sup>3</sup>	Z =	165.85	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6000	4.2500	40.8000	131.0720	2.1500	44.3760	175.4480
	Web		7.6875	4.2500	32.6719	0.1602	2.1500	35.5355	35.6956
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.6500	37.8394	39.6258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.6500	21.0675	21.1300
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.3500	0.2144	2.0008
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.6500	8.1675	8.2300
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	2.1500	0.0000	0.0000
<b>Total</b>			<b>26.79</b>		<b>113.85</b>	<b>134.93</b>		<b>147.20</b>	<b>282.13</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	6.4000	in	S <sub>right</sub> =	44.08	in <sup>3</sup>	x-bar =	6.4000	in	S <sub>right</sub> =	44.08	in <sup>3</sup>
I <sub>y</sub> =	282.13	in <sup>4</sup>	S <sub>left</sub> =	44.08	in <sup>3</sup>	I <sub>y</sub> =	282.13	in <sup>4</sup>	S <sub>left</sub> =	44.08	in <sup>3</sup>
C <sub>right</sub> =	6.4000	in	A =	26.7875	in <sup>2</sup>	C <sub>right</sub> =	6.4000	in	A =	26.7875	in <sup>2</sup>
C <sub>left</sub> =	6.4000	in	r <sub>y</sub> =	3.2453	in	C <sub>left</sub> =	6.4000	in	r <sub>y</sub> =	3.2453	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	497.55 k-ft	497.55 k-ft
V	275.36 k	275.36 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



Made By CTG  
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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section*	W24x104	Bottom Angles:	
$A_1 = b_f =$	12.8000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7500 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	18.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	H =	18.7500 in
$B_3 = t =$	0.5000 in	Gap =	0.2500 in

\*select from dropdown list

Coped Stringer S6-16 @ FB E5

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6000	18.3750	176.4000	0.4500	8.4998	693.5635	694.0135
	Web	8.8750	9.1250	80.9844	233.0150	0.7502	4.9952	238.0101
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	9.6252	324.2572	324.3302
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	6.8752	283.6122	301.6122
3	Additional Plate	0.0000	0.2500	0.0000	0.0000	9.6252	0.0000	0.0000
<b>Total</b>		<b>27.98</b>		<b>276.26</b>	<b>251.54</b>		<b>1306.43</b>	<b>1557.97</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	9.8752 in	S <sub>top</sub> =	175.55 in <sup>3</sup>	y-bar =	9.8752 in	S <sub>top</sub> =	175.55 in <sup>3</sup>
I <sub>x</sub> =	1557.97 in <sup>4</sup>	S <sub>bott.</sub> =	157.77 in <sup>3</sup>	I <sub>x</sub> =	1557.97 in <sup>4</sup>	S <sub>bott.</sub> =	157.77 in <sup>3</sup>
C <sub>top</sub> =	8.8748 in	A =	27.9750 in <sup>2</sup>	C <sub>top</sub> =	8.8748 in	A =	27.9750 in <sup>2</sup>
C <sub>bottom</sub> =	9.8752 in	r <sub>x</sub> =	7.4627 in	C <sub>bottom</sub> =	9.8752 in	r <sub>x</sub> =	7.4627 in
J =	3.3313 in <sup>4</sup>	Z =	195.99 in <sup>3</sup>	Z =	195.99 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6000	4.2500	40.8000	131.0720	2.1500	44.3760	175.4480
	Web		8.8750	4.2500	37.7188	0.1849	2.1500	41.0247	41.2096
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.6500	37.8394	39.6258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.6500	21.0675	21.1300
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.3500	0.2144	2.0008
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.6500	8.1675	8.2300
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	2.1500	0.0000	0.0000
<b>Total</b>			<b>27.98</b>		<b>118.89</b>	<b>134.95</b>		<b>152.69</b>	<b>287.64</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.4000 in	S <sub>right</sub> =	44.94 in <sup>3</sup>	x-bar =	6.4000 in	S <sub>right</sub> =	44.94 in <sup>3</sup>
I <sub>y</sub> =	287.64 in <sup>4</sup>	S <sub>left</sub> =	44.94 in <sup>3</sup>	I <sub>y</sub> =	287.64 in <sup>4</sup>	S <sub>left</sub> =	44.94 in <sup>3</sup>
C <sub>right</sub> =	6.4000 in	A =	27.9750 in <sup>2</sup>	C <sub>right</sub> =	6.4000 in	A =	27.9750 in <sup>2</sup>
C <sub>left</sub> =	6.4000 in	r <sub>y</sub> =	3.2066 in	C <sub>left</sub> =	6.4000 in	r <sub>y</sub> =	3.2066 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	587.97 k-ft	587.97 k-ft
V	300.15 k	300.15 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W24x104	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.8000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7500 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	16.3750 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	17.0625 in
$B_3 = t =$	0.5000 in	$GAP =$	0.6875 in

\*select from dropdown list

Coped Stringer S6-16 @ FB E6

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6000	16.6875	160.2000	0.4500	7.5660	549.5519	550.0019
	Web	7.8125	8.5000	66.4063	158.9457	0.6215	3.0173	161.9630
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	8.8715	275.4597	275.5326
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	6.1215	224.8335	242.8335
3	Additional Plate	0.0000	0.6875	0.0000	0.0000	8.4340	0.0000	0.0000
<b>Total</b>		<b>26.91</b>		<b>245.48</b>	<b>177.47</b>		<b>1052.86</b>	<b>1230.33</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	9.1215 in	S <sub>top</sub> =	154.93 in <sup>3</sup>	y-bar =	9.1215 in	S <sub>top</sub> =	154.93 in <sup>3</sup>
I <sub>x</sub> =	1230.33 in <sup>4</sup>	S <sub>bottom</sub> =	134.88 in <sup>3</sup>	I <sub>x</sub> =	1230.33 in <sup>4</sup>	S <sub>bottom</sub> =	134.88 in <sup>3</sup>
C <sub>top</sub> =	7.9410 in	A =	26.9125 in <sup>2</sup>	C <sub>top</sub> =	7.9410 in	A =	26.9125 in <sup>2</sup>
C <sub>bottom</sub> =	9.1215 in	r <sub>x</sub> =	6.7614 in	C <sub>bottom</sub> =	9.1215 in	r <sub>x</sub> =	6.7614 in
J =	3.2427 in <sup>4</sup>	Z =	170.99 in <sup>3</sup>	Z =	170.99 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6000	4.2500	40.8000	131.0720	2.1500	44.3760	175.4480
	Web		7.8125	4.2500	33.2031	0.1628	2.1500	36.1133	36.2760
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.6500	37.8394	39.6258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.6500	21.0675	21.1300
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.3500	0.2144	2.0008
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.6500	8.1675	8.2300
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	2.1500	0.0000	0.0000
<b>Total</b>			<b>26.91</b>		<b>114.38</b>	<b>134.93</b>		<b>147.78</b>	<b>282.71</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.4000 in	S <sub>right</sub> =	44.17 in <sup>3</sup>	x-bar =	6.4000 in	S <sub>right</sub> =	44.17 in <sup>3</sup>
I <sub>y</sub> =	282.71 in <sup>4</sup>	S <sub>left</sub> =	44.17 in <sup>3</sup>	I <sub>y</sub> =	282.71 in <sup>4</sup>	S <sub>left</sub> =	44.17 in <sup>3</sup>
C <sub>right</sub> =	6.4000 in	A =	26.9125 in <sup>2</sup>	C <sub>right</sub> =	6.4000 in	A =	26.9125 in <sup>2</sup>
C <sub>left</sub> =	6.4000 in	r <sub>y</sub> =	3.2411 in	C <sub>left</sub> =	6.4000 in	r <sub>y</sub> =	3.2411 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	512.97 k-ft	512.97 k-ft
V	277.97 k	277.97 k

F<sub>y</sub> = 36.00 ksi

\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section*	W24x104	Bottom Angles:	
$A_1 = b_f =$	12.8000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7500 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	19.0000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	19.3750 in
$B_3 = t =$	0.5000 in	Gap =	0.3750 in

\*select from dropdown list

Coped Stringer S7-16 @ FB E5

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6000	19.0000	182.4000	0.4500	8.7976	743.0200	743.4700
	Web	9.1250	9.5000	86.6875	253.2663	0.7024	4.5019	257.7681
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	9.9524	346.6753	346.7483
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	7.2024	311.2467	329.2467
3	Additional Plate	0.0000	0.3750	0.0000	0.0000	9.8274	0.0000	0.0000
<b>Total</b>		<b>28.23</b>		<b>287.96</b>	<b>271.79</b>		<b>1405.44</b>	<b>1677.23</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	10.2024 in	S <sub>top</sub> =	182.85 in <sup>3</sup>	y-bar =	10.2024 in	S <sub>top</sub> =	182.85 in <sup>3</sup>
I <sub>x</sub> =	1677.23 in <sup>4</sup>	S <sub>bottom</sub> =	164.40 in <sup>3</sup>	I <sub>x</sub> =	1677.23 in <sup>4</sup>	S <sub>bottom</sub> =	164.40 in <sup>3</sup>
C <sub>top</sub> =	9.1726 in	A =	28.2250 in <sup>2</sup>	C <sub>top</sub> =	9.1726 in	A =	28.2250 in <sup>2</sup>
C <sub>bottom</sub> =	10.2024 in	r <sub>x</sub> =	7.7087 in	C <sub>bottom</sub> =	10.2024 in	r <sub>x</sub> =	7.7087 in
J =	3.3521 in <sup>4</sup>	Z =	204.20 in <sup>3</sup>			Z =	204.20 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6000	4.2500	40.8000	131.0720	2.1500	44.3760	175.4480
	Web		9.1250	4.2500	38.7813	0.1901	2.1500	42.1803	42.3704
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.6500	37.8394	39.6258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.6500	21.0675	21.1300
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.3500	0.2144	2.0008
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.6500	8.1675	8.2300
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	2.1500	0.0000	0.0000
<b>Total</b>			<b>28.23</b>		<b>119.96</b>	<b>134.96</b>		<b>153.85</b>	<b>288.81</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.4000 in	S <sub>right</sub> =	45.13 in <sup>3</sup>	x-bar =	6.4000 in	S <sub>right</sub> =	45.13 in <sup>3</sup>
I <sub>y</sub> =	288.81 in <sup>4</sup>	S <sub>left</sub> =	45.13 in <sup>3</sup>	I <sub>y</sub> =	288.81 in <sup>4</sup>	S <sub>left</sub> =	45.13 in <sup>3</sup>
C <sub>right</sub> =	6.4000 in	A =	28.2250 in <sup>2</sup>	C <sub>right</sub> =	6.4000 in	A =	28.2250 in <sup>2</sup>
C <sub>left</sub> =	6.4000 in	r <sub>y</sub> =	3.1988 in	C <sub>left</sub> =	6.4000 in	r <sub>y</sub> =	3.1988 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	612.60 k-ft	612.60 k-ft
V	305.37 k	305.37 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section





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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W24x104	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.8000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7500 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	17.1250 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	17.8125 in
$B_3 = t =$	0.5000 in	$Gap =$	0.6875 in

\*select from dropdown list

Coped Stringer S7-16 @ FB E6

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6000	17.4375	167.4000	0.4500	7.9482	606.4705	606.9205
	Web	8.1875	8.8750	72.6641	182.9501	0.6143	3.0896	186.0397
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	9.2393	298.7758	298.8487
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	6.4893	252.6655	270.6655
3	Additional Plate	0.0000	0.6875	0.0000	0.0000	8.8018	0.0000	0.0000
<b>Total</b>		<b>27.29</b>		<b>258.94</b>	<b>201.47</b>		<b>1161.00</b>	<b>1362.47</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	9.4893 in	S <sub>top</sub> =	163.70 in <sup>3</sup>	y-bar =	9.4893 in	S <sub>top</sub> =	163.70 in <sup>3</sup>
I <sub>x</sub> =	1362.47 in <sup>4</sup>	S <sub>bottom</sub> =	143.58 in <sup>3</sup>	I <sub>x</sub> =	1362.47 in <sup>4</sup>	S <sub>bottom</sub> =	143.58 in <sup>3</sup>
C <sub>top</sub> =	8.3232 in	A =	27.2875 in <sup>2</sup>	C <sub>top</sub> =	8.3232 in	A =	27.2875 in <sup>2</sup>
C <sub>bottom</sub> =	9.4893 in	r <sub>x</sub> =	7.0661 in	C <sub>bottom</sub> =	9.4893 in	r <sub>x</sub> =	7.0661 in
J =	3.2740 in <sup>4</sup>	Z =	181.15 in <sup>3</sup>	Z =	181.15 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6000	4.2500	40.8000	131.0720	2.1500	44.3760	175.4480
	Web		8.1875	4.2500	34.7969	0.1706	2.1500	37.8467	38.0173
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.6500	37.8394	39.6258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.6500	21.0675	21.1300
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.3500	0.2144	2.0008
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.6500	8.1675	8.2300
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	2.1500	0.0000	0.0000
<b>Total</b>			<b>27.29</b>		<b>115.97</b>	<b>134.94</b>		<b>149.51</b>	<b>284.45</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.4000 in	S <sub>right</sub> =	44.45 in <sup>3</sup>	x-bar =	6.4000 in	S <sub>right</sub> =	44.45 in <sup>3</sup>
I <sub>y</sub> =	284.45 in <sup>4</sup>	S <sub>left</sub> =	44.45 in <sup>3</sup>	I <sub>y</sub> =	284.45 in <sup>4</sup>	S <sub>left</sub> =	44.45 in <sup>3</sup>
C <sub>right</sub> =	6.4000 in	A =	27.2875 in <sup>2</sup>	C <sub>right</sub> =	6.4000 in	A =	27.2875 in <sup>2</sup>
C <sub>left</sub> =	6.4000 in	r <sub>y</sub> =	3.2287 in	C <sub>left</sub> =	6.4000 in	r <sub>y</sub> =	3.2287 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	543.45 k-ft	543.45 k-ft
V	285.80 k	285.80 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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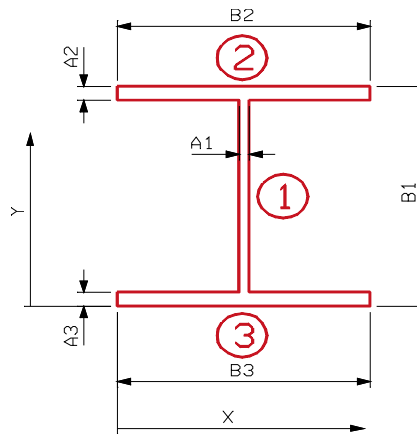
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 45.6250$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



Fascia Stringer F2-16 Avg

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	16.5469	22.8125	377.4756	2684.7520	0.0000	0.0000	2684.7520
2	Top Flange	6.0000	45.2500	271.5000	0.2813	22.4375	3020.6484	3020.9297
3	Bottom Flange	6.0000	0.3750	2.2500	0.2813	22.4375	3020.6484	3020.9297
<b>Total</b>		<b>28.55</b>		<b>651.23</b>	<b>2685.31</b>		<b>6041.30</b>	<b>8726.61</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	22.8125 in	$S_{top} =$	382.54 in <sup>3</sup>	y-bar =	22.8125 in	$S_{top} =$	382.54 in <sup>3</sup>
$I_x =$	8726.61 in <sup>4</sup>	$S_{bottom} =$	382.54 in <sup>3</sup>	$I_x =$	8726.61 in <sup>4</sup>	$S_{bottom} =$	382.54 in <sup>3</sup>
$C_{top} =$	22.8125 in	A =	28.5469 in <sup>2</sup>	$C_{top} =$	22.8125 in	A =	28.5469 in <sup>2</sup>
$C_{bottom} =$	22.8125 in	$r_x =$	17.4841 in	$C_{bottom} =$	22.8125 in	$r_x =$	17.4841 in
J =	3.0256 in <sup>4</sup>	Z =	451.78 in <sup>3</sup>			Z =	451.78 in <sup>3</sup>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	16.5469	4.0000	66.1875	0.1939	0.0000	0.0000	0.1939
2	Top Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>		<b>28.55</b>		<b>114.19</b>	<b>64.19</b>		<b>0.00</b>	<b>64.19</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000 in	S <sub>right</sub> =	16.05 in <sup>3</sup>	x-bar =	4.0000 in	S <sub>right</sub> =	16.05 in <sup>3</sup>
I <sub>y</sub> =	64.19 in <sup>4</sup>	S <sub>left</sub> =	16.05 in <sup>3</sup>	I <sub>y</sub> =	64.19 in <sup>4</sup>	S <sub>left</sub> =	16.05 in <sup>3</sup>
C <sub>right</sub> =	4.0000 in	A =	28.5469 in <sup>2</sup>	C <sub>right</sub> =	4.0000 in	A =	28.5469 in <sup>2</sup>
C <sub>left</sub> =	4.0000 in	r <sub>y</sub> =	1.4996 in	C <sub>left</sub> =	4.0000 in	r <sub>y</sub> =	1.4996 in

Non-composite Capacities*		
	AB	AI
M	1147.61 k-ft	1147.61 k-ft
V	155.96 k	155.96 k

\*Noncompact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Job No. P402110046  
Sheet No. \_\_\_\_\_

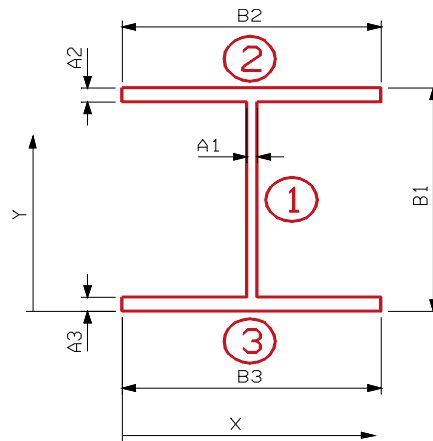
Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 24.5000$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 9.5000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in

$d_o = n/a$  in

$d_o =$  stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F2-16 @ FB E6**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		8.6250	12.2500	105.6563	380.2188	0.6142	3.2540	383.4727
2	Top Flange		7.1250	24.1250	171.8906	0.3340	11.2608	903.4861	903.8201
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	12.4892	935.8843	936.1656
<b>Total</b>			<b>21.75</b>		<b>279.80</b>	<b>380.83</b>		<b>1842.62</b>	<b>2223.46</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	12.8642	in	S <sub>top</sub> =	191.09	in <sup>3</sup>	y-bar =	12.8642	in	S <sub>top</sub> =	191.09	in <sup>3</sup>
I <sub>x</sub> =	2223.46	in <sup>4</sup>	S <sub>bott.</sub> =	172.84	in <sup>3</sup>	I <sub>x</sub> =	2223.46	in <sup>4</sup>	S <sub>bott.</sub> =	172.84	in <sup>3</sup>
C <sub>top</sub> =	11.6358	in	A =	21.7500	in <sup>2</sup>	C <sub>top</sub> =	11.6358	in	A =	21.7500	in <sup>2</sup>
C <sub>bottom</sub> =	12.8642	in	r <sub>x</sub> =	10.1108	in	C <sub>bottom</sub> =	12.8642	in	r <sub>x</sub> =	10.1108	in
J =	2.8652	in <sup>4</sup>	Z =	204.61	in <sup>3</sup>	J =	2.8652	in <sup>4</sup>	Z =	204.61	in <sup>3</sup>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		8.6250	4.7500	40.9688	0.1011	0.0000	0.0000	0.1011
2	Top Flange		7.1250	4.7500	33.8438	53.5859	0.0000	0.0000	53.5859
3	Bottom Flange		6.0000	4.7500	28.5000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>			<b>21.75</b>		<b>103.31</b>	<b>85.69</b>		<b>0.00</b>	<b>85.69</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	4.7500	in	S <sub>right</sub> =	18.04	in <sup>3</sup>	x-bar =	4.7500	in	S <sub>right</sub> =	18.04	in <sup>3</sup>
I <sub>y</sub> =	85.69	in <sup>4</sup>	S <sub>left</sub> =	18.04	in <sup>3</sup>	I <sub>y</sub> =	85.69	in <sup>4</sup>	S <sub>left</sub> =	18.04	in <sup>3</sup>
C <sub>right</sub> =	4.7500	in	A =	21.7500	in <sup>2</sup>	C <sub>right</sub> =	4.7500	in	A =	21.7500	in <sup>2</sup>
C <sub>left</sub> =	4.7500	in	r <sub>y</sub> =	1.9849	in	C <sub>left</sub> =	4.7500	in	r <sub>y</sub> =	1.9849	in

Non-composite Capacities*		
	AB	AI
M	613.83 k-ft	613.83 k-ft
V	180.09 k	180.09 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Job No. P402110046  
Sheet No. \_\_\_\_\_

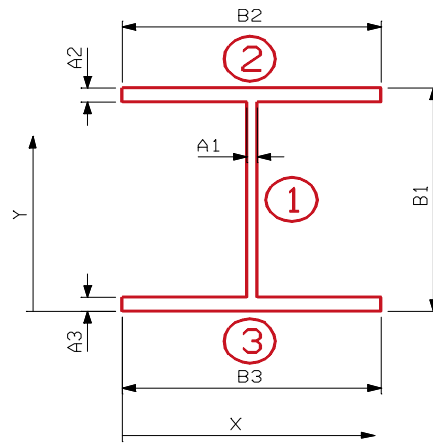
Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.7500$  in
- $B_1 = d = 18.7500$  in
- $A_2 = t_f = 1.2500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.7500$  in

$d_o = 14.0000$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F1-17 @ FB E6**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		12.5625	9.3750	117.7734	293.7139	0.9764	11.9764	305.6903
2	Top Flange		10.0000	18.1250	181.2500	1.3021	7.7736	604.2894	605.5915
3	Bottom Flange		6.5625	0.3750	2.4609	0.3076	9.9764	653.1555	653.4631
<b>Total</b>			<b>29.13</b>		<b>301.48</b>	<b>295.32</b>		<b>1269.42</b>	<b>1564.74</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	10.3514	in	$S_{top} = 186.31$	$in^3$	y-bar =	10.3514	in	$S_{top} = 186.31$	$in^3$		
$I_x =$	1564.74	$in^4$	$S_{bott.} = 151.16$	$in^3$	$I_x =$	1564.74	$in^4$	$S_{bott.} = 151.16$	$in^3$		
$C_{top} =$	8.3986	in	A =	29.1250	$in^2$	$C_{top} =$	8.3986	in	A =	29.1250	$in^2$
$C_{bottom} =$	10.3514	in	$r_x = 7.3297$	in	$C_{bottom} =$	10.3514	in	$r_x = 7.3297$	in		
J =	8.7943	$in^4$	Z =	196.09	$in^3$	Z =	196.09	$in^3$			



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Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		12.5625	4.3750	54.9609	0.5889	0.0000	0.0000	0.5889
2	Top Flange		10.0000	4.3750	43.7500	53.3333	0.0000	0.0000	53.3333
3	Bottom Flange		6.5625	4.3750	28.7109	41.8701	0.0000	0.0000	41.8701
<b>Total</b>			<b>29.13</b>		<b>127.42</b>	<b>95.79</b>		<b>0.00</b>	<b>95.79</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	4.3750	in	S <sub>right</sub> =	21.90	in <sup>3</sup>	x-bar =	4.3750	in	S <sub>right</sub> =	21.90	in <sup>3</sup>
I <sub>y</sub> =	95.79	in <sup>4</sup>	S <sub>left</sub> =	21.90	in <sup>3</sup>	I <sub>y</sub> =	95.79	in <sup>4</sup>	S <sub>left</sub> =	21.90	in <sup>3</sup>
C <sub>right</sub> =	4.3750	in	A =	29.1250	in <sup>2</sup>	C <sub>right</sub> =	4.3750	in	A =	29.1250	in <sup>2</sup>
C <sub>left</sub> =	4.3750	in	r <sub>y</sub> =	1.8136	in	C <sub>left</sub> =	4.3750	in	r <sub>y</sub> =	1.8136	in

Non-composite Capacities*		
	AB	AI
<b>M</b>	588.27 k-ft	588.27 k-ft
<b>V</b>	262.31 k	262.31 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear





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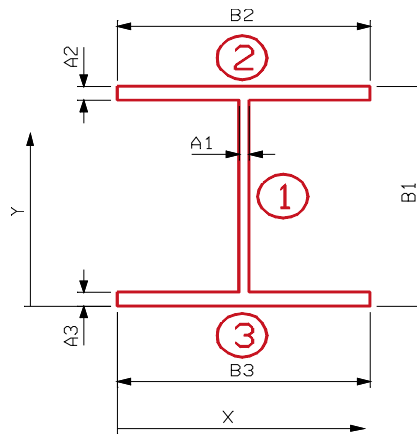
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 39.3750$  in
- $A_2 = t_f = 1.2500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 1.2500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



Fascia Stringer F1-17 Avg

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		13.8281	19.6875	272.2412	1566.9174	0.0000	0.0000	1566.9174
2	Top Flange		10.0000	38.7500	387.5000	1.3021	19.0625	3633.7891	3635.0911
3	Bottom Flange		10.0000	0.6250	6.2500	1.3021	19.0625	3633.7891	3635.0911
<b>Total</b>			<b>33.83</b>		<b>665.99</b>	<b>1569.52</b>		<b>7267.58</b>	<b>8837.10</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	19.6875	in	$S_{top} = 448.87$ in <sup>3</sup>	y-bar =	19.6875	in	$S_{top} = 448.87$ in <sup>3</sup>
$I_x =$	8837.10	in <sup>4</sup>	$S_{bott.} = 448.87$ in <sup>3</sup>	$I_x =$	8837.10	in <sup>4</sup>	$S_{bott.} = 448.87$ in <sup>3</sup>
$C_{top} =$	19.6875	in	$A = 33.8281$ in <sup>2</sup>	$C_{top} =$	19.6875	in	$A = 33.8281$ in <sup>2</sup>
$C_{bottom} =$	19.6875	in	$r_x = 16.1628$ in	$C_{bottom} =$	19.6875	in	$r_x = 16.1628$ in
$J =$	11.0649	in <sup>4</sup>	$Z = 508.73$ in <sup>3</sup>	$Z =$	508.73	in <sup>3</sup>	



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Date 3/16/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	13.8281	4.0000	55.3125	0.1620	0.0000	0.0000	0.1620
2	Top Flange	10.0000	4.0000	40.0000	53.3333	0.0000	0.0000	53.3333
3	Bottom Flange	10.0000	4.0000	40.0000	53.3333	0.0000	0.0000	53.3333
<b>Total</b>		<b>33.83</b>		<b>135.31</b>	<b>106.83</b>		<b>0.00</b>	<b>106.83</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000 in	S <sub>right</sub> =	26.71 in <sup>3</sup>	x-bar =	4.0000 in	S <sub>right</sub> =	26.71 in <sup>3</sup>
I <sub>y</sub> =	106.83 in <sup>4</sup>	S <sub>left</sub> =	26.71 in <sup>3</sup>	I <sub>y</sub> =	106.83 in <sup>4</sup>	S <sub>left</sub> =	26.71 in <sup>3</sup>
C <sub>right</sub> =	4.0000 in	A =	33.8281 in <sup>2</sup>	C <sub>right</sub> =	4.0000 in	A =	33.8281 in <sup>2</sup>
C <sub>left</sub> =	4.0000 in	r <sub>y</sub> =	1.7771 in	C <sub>left</sub> =	4.0000 in	r <sub>y</sub> =	1.7771 in

Non-composite Capacities*		
	AB	AI
M	1526.18 k-ft	1526.18 k-ft
V	186.63 k	186.63 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section*	W24x104	Bottom Angles:	
$A_1 = b_f =$	12.8000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7500 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	20.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	20.8750 in
$B_3 = t =$	0.5000 in	Gap =	0.3750 in

\*select from dropdown list

Coped Stringer S1-17 @ FB F1

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6000	20.5000	196.8000	0.4500	9.5632	877.9662	878.4162
	Web	9.8750	10.2500	101.2188	320.9889	0.6868	4.6580	325.6469
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	10.6868	399.7269	399.7998
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	7.9368	377.9567	395.9567
3	Additional Plate	0.0000	0.3750	0.0000	0.0000	10.5618	0.0000	0.0000
<b>Total</b>		<b>28.98</b>		<b>316.89</b>	<b>339.51</b>		<b>1660.31</b>	<b>1999.82</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	10.9368 in	S <sub>top</sub> =	201.23 in <sup>3</sup>	y-bar =	10.9368 in	S <sub>top</sub> =	201.23 in <sup>3</sup>
I <sub>x</sub> =	1999.82 in <sup>4</sup>	S <sub>bott.</sub> =	182.85 in <sup>3</sup>	I <sub>x</sub> =	1999.82 in <sup>4</sup>	S <sub>bott.</sub> =	182.85 in <sup>3</sup>
C <sub>top</sub> =	9.9382 in	A =	28.9750 in <sup>2</sup>	C <sub>top</sub> =	9.9382 in	A =	28.9750 in <sup>2</sup>
C <sub>bottom</sub> =	10.9368 in	r <sub>x</sub> =	8.3078 in	C <sub>bottom</sub> =	10.9368 in	r <sub>x</sub> =	8.3078 in
J =	3.4146 in <sup>4</sup>	Z =	225.65 in <sup>3</sup>	Z =	225.65 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6000	4.2500	40.8000	131.0720	2.1500	44.3760	175.4480
	Web		9.8750	4.2500	41.9688	0.2057	2.1500	45.6472	45.8529
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.6500	37.8394	39.6258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.6500	21.0675	21.1300
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.3500	0.2144	2.0008
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.6500	8.1675	8.2300
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	2.1500	0.0000	0.0000
<b>Total</b>			<b>28.98</b>		<b>123.14</b>	<b>134.98</b>		<b>157.31</b>	<b>292.29</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.4000 in	S <sub>right</sub> =	45.67 in <sup>3</sup>	x-bar =	6.4000 in	S <sub>right</sub> =	45.67 in <sup>3</sup>
I <sub>y</sub> =	292.29 in <sup>4</sup>	S <sub>left</sub> =	45.67 in <sup>3</sup>	I <sub>y</sub> =	292.29 in <sup>4</sup>	S <sub>left</sub> =	45.67 in <sup>3</sup>
C <sub>right</sub> =	6.4000 in	A =	28.9750 in <sup>2</sup>	C <sub>right</sub> =	6.4000 in	A =	28.9750 in <sup>2</sup>
C <sub>left</sub> =	6.4000 in	r <sub>y</sub> =	3.1761 in	C <sub>left</sub> =	6.4000 in	r <sub>y</sub> =	3.1761 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	676.95 k-ft	676.95 k-ft
V	321.03 k	321.03 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section*	W24x104	Bottom Angles:	
$A_1 = b_f =$	12.8000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7500 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	20.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	20.8750 in
$B_3 = t =$	0.5000 in	Gap =	0.3750 in

\*select from dropdown list

Coped Stringer S2-17 @ FB F1

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6000	20.5000	196.8000	0.4500	9.5632	877.9662	878.4162
	Web	9.8750	10.2500	101.2188	320.9889	0.6868	4.6580	325.6469
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	10.6868	399.7269	399.7998
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	7.9368	377.9567	395.9567
3	Additional Plate	0.0000	0.3750	0.0000	0.0000	10.5618	0.0000	0.0000
<b>Total</b>		<b>28.98</b>		<b>316.89</b>	<b>339.51</b>		<b>1660.31</b>	<b>1999.82</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	10.9368 in	S <sub>top</sub> =	201.23 in <sup>3</sup>	y-bar =	10.9368 in	S <sub>top</sub> =	201.23 in <sup>3</sup>
I <sub>x</sub> =	1999.82 in <sup>4</sup>	S <sub>bott.</sub> =	182.85 in <sup>3</sup>	I <sub>x</sub> =	1999.82 in <sup>4</sup>	S <sub>bott.</sub> =	182.85 in <sup>3</sup>
C <sub>top</sub> =	9.9382 in	A =	28.9750 in <sup>2</sup>	C <sub>top</sub> =	9.9382 in	A =	28.9750 in <sup>2</sup>
C <sub>bottom</sub> =	10.9368 in	r <sub>x</sub> =	8.3078 in	C <sub>bottom</sub> =	10.9368 in	r <sub>x</sub> =	8.3078 in
J =	3.4146 in <sup>4</sup>	Z =	225.65 in <sup>3</sup>			Z =	225.65 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6000	4.2500	40.8000	131.0720	2.1500	44.3760	175.4480
	Web		9.8750	4.2500	41.9688	0.2057	2.1500	45.6472	45.8529
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.6500	37.8394	39.6258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.6500	21.0675	21.1300
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.3500	0.2144	2.0008
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.6500	8.1675	8.2300
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	2.1500	0.0000	0.0000
<b>Total</b>			<b>28.98</b>		<b>123.14</b>	<b>134.98</b>		<b>157.31</b>	<b>292.29</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.4000 in	S <sub>right</sub> =	45.67 in <sup>3</sup>	x-bar =	6.4000 in	S <sub>right</sub> =	45.67 in <sup>3</sup>
I <sub>y</sub> =	292.29 in <sup>4</sup>	S <sub>left</sub> =	45.67 in <sup>3</sup>	I <sub>y</sub> =	292.29 in <sup>4</sup>	S <sub>left</sub> =	45.67 in <sup>3</sup>
C <sub>right</sub> =	6.4000 in	A =	28.9750 in <sup>2</sup>	C <sub>right</sub> =	6.4000 in	A =	28.9750 in <sup>2</sup>
C <sub>left</sub> =	6.4000 in	r <sub>y</sub> =	3.1761 in	C <sub>left</sub> =	6.4000 in	r <sub>y</sub> =	3.1761 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	676.95 k-ft	676.95 k-ft
V	321.03 k	321.03 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section*	W24x104	Bottom Angles:	
$A_1 = b_f =$	12.8000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7500 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	20.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	20.8750 in
$B_3 = t =$	0.5000 in	Gap =	0.3750 in

\*select from dropdown list

Coped Stringer S3-17 @ FB F1

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6000	20.5000	196.8000	0.4500	9.5632	877.9662	878.4162
	Web	9.8750	10.2500	101.2188	320.9889	0.6868	4.6580	325.6469
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	10.6868	399.7269	399.7998
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	7.9368	377.9567	395.9567
3	Additional Plate	0.0000	0.3750	0.0000	0.0000	10.5618	0.0000	0.0000
<b>Total</b>		<b>28.98</b>		<b>316.89</b>	<b>339.51</b>		<b>1660.31</b>	<b>1999.82</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	10.9368 in	S <sub>top</sub> =	201.23 in <sup>3</sup>	y-bar =	10.9368 in	S <sub>top</sub> =	201.23 in <sup>3</sup>
I <sub>x</sub> =	1999.82 in <sup>4</sup>	S <sub>bottom</sub> =	182.85 in <sup>3</sup>	I <sub>x</sub> =	1999.82 in <sup>4</sup>	S <sub>bottom</sub> =	182.85 in <sup>3</sup>
C <sub>top</sub> =	9.9382 in	A =	28.9750 in <sup>2</sup>	C <sub>top</sub> =	9.9382 in	A =	28.9750 in <sup>2</sup>
C <sub>bottom</sub> =	10.9368 in	r <sub>x</sub> =	8.3078 in	C <sub>bottom</sub> =	10.9368 in	r <sub>x</sub> =	8.3078 in
J =	3.4146 in <sup>4</sup>	Z =	225.65 in <sup>3</sup>	Z =	225.65 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6000	4.2500	40.8000	131.0720	2.1500	44.3760	175.4480
	Web		9.8750	4.2500	41.9688	0.2057	2.1500	45.6472	45.8529
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.6500	37.8394	39.6258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.6500	21.0675	21.1300
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.3500	0.2144	2.0008
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.6500	8.1675	8.2300
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	2.1500	0.0000	0.0000
<b>Total</b>			<b>28.98</b>		<b>123.14</b>	<b>134.98</b>		<b>157.31</b>	<b>292.29</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.4000 in	S <sub>right</sub> =	45.67 in <sup>3</sup>	x-bar =	6.4000 in	S <sub>right</sub> =	45.67 in <sup>3</sup>
I <sub>y</sub> =	292.29 in <sup>4</sup>	S <sub>left</sub> =	45.67 in <sup>3</sup>	I <sub>y</sub> =	292.29 in <sup>4</sup>	S <sub>left</sub> =	45.67 in <sup>3</sup>
C <sub>right</sub> =	6.4000 in	A =	28.9750 in <sup>2</sup>	C <sub>right</sub> =	6.4000 in	A =	28.9750 in <sup>2</sup>
C <sub>left</sub> =	6.4000 in	r <sub>y</sub> =	3.1761 in	C <sub>left</sub> =	6.4000 in	r <sub>y</sub> =	3.1761 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	676.95 k-ft	676.95 k-ft
V	321.03 k	321.03 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section*	W24x104	Bottom Angles:	
$A_1 = b_f =$	12.8000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7500 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	20.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	20.8750 in
$B_3 = t =$	0.5000 in	Gap =	0.3750 in

\*select from dropdown list

Coped Stringer S4-17 @ FB F1

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.6000	20.5000	196.8000	0.4500	9.5632	877.9662	878.4162
	Web	9.8750	10.2500	101.2188	320.9889	0.6868	4.6580	325.6469
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	10.6868	399.7269	399.7998
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	7.9368	377.9567	395.9567
3	Additional Plate	0.0000	0.3750	0.0000	0.0000	10.5618	0.0000	0.0000
<b>Total</b>		<b>28.98</b>		<b>316.89</b>	<b>339.51</b>		<b>1660.31</b>	<b>1999.82</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	10.9368 in	S <sub>top</sub> =	201.23 in <sup>3</sup>	y-bar =	10.9368 in	S <sub>top</sub> =	201.23 in <sup>3</sup>
I <sub>x</sub> =	1999.82 in <sup>4</sup>	S <sub>bott.</sub> =	182.85 in <sup>3</sup>	I <sub>x</sub> =	1999.82 in <sup>4</sup>	S <sub>bott.</sub> =	182.85 in <sup>3</sup>
C <sub>top</sub> =	9.9382 in	A =	28.9750 in <sup>2</sup>	C <sub>top</sub> =	9.9382 in	A =	28.9750 in <sup>2</sup>
C <sub>bottom</sub> =	10.9368 in	r <sub>x</sub> =	8.3078 in	C <sub>bottom</sub> =	10.9368 in	r <sub>x</sub> =	8.3078 in
J =	3.4146 in <sup>4</sup>	Z =	225.65 in <sup>3</sup>	Z =	225.65 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.6000	4.2500	40.8000	131.0720	2.1500	44.3760	175.4480
	Web		9.8750	4.2500	41.9688	0.2057	2.1500	45.6472	45.8529
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.6500	37.8394	39.6258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.6500	21.0675	21.1300
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.3500	0.2144	2.0008
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.6500	8.1675	8.2300
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	2.1500	0.0000	0.0000
<b>Total</b>			<b>28.98</b>		<b>123.14</b>	<b>134.98</b>		<b>157.31</b>	<b>292.29</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.4000 in	S <sub>right</sub> =	45.67 in <sup>3</sup>	x-bar =	6.4000 in	S <sub>right</sub> =	45.67 in <sup>3</sup>
I <sub>y</sub> =	292.29 in <sup>4</sup>	S <sub>left</sub> =	45.67 in <sup>3</sup>	I <sub>y</sub> =	292.29 in <sup>4</sup>	S <sub>left</sub> =	45.67 in <sup>3</sup>
C <sub>right</sub> =	6.4000 in	A =	28.9750 in <sup>2</sup>	C <sub>right</sub> =	6.4000 in	A =	28.9750 in <sup>2</sup>
C <sub>left</sub> =	6.4000 in	r <sub>y</sub> =	3.1761 in	C <sub>left</sub> =	6.4000 in	r <sub>y</sub> =	3.1761 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	676.95 k-ft	676.95 k-ft
V	321.03 k	321.03 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



Made By CTG  
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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section*	W24x117	Bottom Angles:	
$A_1 = b_f =$	12.8000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8500 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	20.8750 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5500 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	21.3750 in
$B_3 = t =$	0.5500 in	Gap =	0.5000 in

\*select from dropdown list

Coped Stringer S5-17 @ FB F1

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	10.8800	20.9500	227.9360	0.6551	9.4002	961.3879	962.0429
	Web	11.0138	10.5125	115.7820	368.0434	1.0373	11.8518	379.8952
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	11.2998	446.9030	446.9759
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	8.5498	438.5994	456.5994
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	11.0498	0.0000	0.0000
<b>Total</b>		<b>31.39</b>		<b>362.59</b>	<b>386.77</b>		<b>1858.74</b>	<b>2245.51</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	11.5498 in	S <sub>top</sub> =	228.55 in <sup>3</sup>	y-bar =	11.5498 in	S <sub>top</sub> =	228.55 in <sup>3</sup>
I <sub>x</sub> =	2245.51 in <sup>4</sup>	S <sub>bottom</sub> =	194.42 in <sup>3</sup>	I <sub>x</sub> =	2245.51 in <sup>4</sup>	S <sub>bottom</sub> =	194.42 in <sup>3</sup>
C <sub>top</sub> =	9.8252 in	A =	31.3938 in <sup>2</sup>	C <sub>top</sub> =	9.8252 in	A =	31.3938 in <sup>2</sup>
C <sub>bottom</sub> =	11.5498 in	r <sub>x</sub> =	8.4574 in	C <sub>bottom</sub> =	11.5498 in	r <sub>x</sub> =	8.4574 in
J =	4.5225 in <sup>4</sup>	Z =	248.83 in <sup>3</sup>	Z =	<b>248.83</b> in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		10.8800	4.2750	46.5120	148.5483	2.1250	49.1300	197.6783
	Web		11.0138	4.2750	47.0838	0.2776	2.1250	49.7340	50.0116
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.6500	37.8394	39.6258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.6500	21.0675	21.1300
2 (Right)	Horizontal Leg		1.7500	6.8000	11.9000	1.7865	0.4000	0.2800	2.0665
	Vertical Leg		3.0000	4.8000	14.4000	0.0625	1.6000	7.6800	7.7425
3	Additional Plate		0.0000	4.2750	0.0000	0.0000	2.1250	0.0000	0.0000
<b>Total</b>			<b>31.39</b>		<b>134.21</b>	<b>152.52</b>		<b>165.73</b>	<b>318.25</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.4000 in	S <sub>right</sub> =	49.73 in <sup>3</sup>	x-bar =	6.4000 in	S <sub>right</sub> =	49.73 in <sup>3</sup>
I <sub>y</sub> =	318.25 in <sup>4</sup>	S <sub>left</sub> =	49.73 in <sup>3</sup>	I <sub>y</sub> =	318.25 in <sup>4</sup>	S <sub>left</sub> =	49.73 in <sup>3</sup>
C <sub>right</sub> =	6.4000 in	A =	31.3938 in <sup>2</sup>	C <sub>right</sub> =	6.4000 in	A =	31.3938 in <sup>2</sup>
C <sub>left</sub> =	6.4000 in	r <sub>y</sub> =	3.1839 in	C <sub>left</sub> =	6.4000 in	r <sub>y</sub> =	3.1839 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	746.49 k-ft	746.49 k-ft
V	344.81 k	344.81 k

F <sub>y</sub> =	<b>36.00 ksi</b>
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\*Compact Section



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Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section*	W24x117	Bottom Angles:	
$A_1 = b_f =$	12.8000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8500 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	20.8750 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5500 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	21.3750 in
$B_3 = t =$	0.5500 in	Gap =	0.5000 in

\*select from dropdown list

Coped Stringer S6-17 @ FB F1

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	10.8800	20.9500	227.9360	0.6551	9.4002	961.3879	962.0429
	Web	11.0138	10.5125	115.7820	368.0434	1.0373	11.8518	379.8952
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	11.2998	446.9030	446.9759
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	8.5498	438.5994	456.5994
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	11.0498	0.0000	0.0000
<b>Total</b>		<b>31.39</b>		<b>362.59</b>	<b>386.77</b>		<b>1858.74</b>	<b>2245.51</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	11.5498 in	S <sub>top</sub> =	228.55 in <sup>3</sup>	y-bar =	11.5498 in	S <sub>top</sub> =	228.55 in <sup>3</sup>
I <sub>x</sub> =	2245.51 in <sup>4</sup>	S <sub>bottom</sub> =	194.42 in <sup>3</sup>	I <sub>x</sub> =	2245.51 in <sup>4</sup>	S <sub>bottom</sub> =	194.42 in <sup>3</sup>
C <sub>top</sub> =	9.8252 in	A =	31.3938 in <sup>2</sup>	C <sub>top</sub> =	9.8252 in	A =	31.3938 in <sup>2</sup>
C <sub>bottom</sub> =	11.5498 in	r <sub>x</sub> =	8.4574 in	C <sub>bottom</sub> =	11.5498 in	r <sub>x</sub> =	8.4574 in
J =	4.5225 in <sup>4</sup>	Z =	248.83 in <sup>3</sup>	Z =	<b>248.83</b> in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		10.8800	4.2750	46.5120	148.5483	2.1250	49.1300	197.6783
	Web		11.0138	4.2750	47.0838	0.2776	2.1250	49.7340	50.0116
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.6500	37.8394	39.6258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.6500	21.0675	21.1300
2 (Right)	Horizontal Leg		1.7500	6.8000	11.9000	1.7865	0.4000	0.2800	2.0665
	Vertical Leg		3.0000	4.8000	14.4000	0.0625	1.6000	7.6800	7.7425
3	Additional Plate		0.0000	4.2750	0.0000	0.0000	2.1250	0.0000	0.0000
<b>Total</b>			<b>31.39</b>		<b>134.21</b>	<b>152.52</b>		<b>165.73</b>	<b>318.25</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.4000 in	S <sub>right</sub> =	49.73 in <sup>3</sup>	x-bar =	6.4000 in	S <sub>right</sub> =	49.73 in <sup>3</sup>
I <sub>y</sub> =	318.25 in <sup>4</sup>	S <sub>left</sub> =	49.73 in <sup>3</sup>	I <sub>y</sub> =	318.25 in <sup>4</sup>	S <sub>left</sub> =	49.73 in <sup>3</sup>
C <sub>right</sub> =	6.4000 in	A =	31.3938 in <sup>2</sup>	C <sub>right</sub> =	6.4000 in	A =	31.3938 in <sup>2</sup>
C <sub>left</sub> =	6.4000 in	r <sub>y</sub> =	3.1839 in	C <sub>left</sub> =	6.4000 in	r <sub>y</sub> =	3.1839 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	746.49 k-ft	746.49 k-ft
V	344.81 k	344.81 k

F <sub>y</sub> =	<b>36.00 ksi</b>
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\*Compact Section



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section*	W24x117	Bottom Angles:	
$A_1 = b_f =$	12.8000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8500 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	20.8750 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5500 in		



Additional Plate:		Miscellaneous:	
$A_3 = d =$	0.0000 in	$H =$	21.3750 in
$B_3 = t =$	0.5500 in	Gap =	0.5000 in

\*select from dropdown list

Coped Stringer S7-17 @ FB F1

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	10.8800	20.9500	227.9360	0.6551	9.4002	961.3879	962.0429
	Web	11.0138	10.5125	115.7820	368.0434	1.0373	11.8518	379.8952
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	11.2998	446.9030	446.9759
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	8.5498	438.5994	456.5994
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	11.0498	0.0000	0.0000
<b>Total</b>		<b>31.39</b>		<b>362.59</b>	<b>386.77</b>		<b>1858.74</b>	<b>2245.51</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/14/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	11.5498 in	S <sub>top</sub> =	228.55 in <sup>3</sup>	y-bar =	11.5498 in	S <sub>top</sub> =	228.55 in <sup>3</sup>
I <sub>x</sub> =	2245.51 in <sup>4</sup>	S <sub>bott.</sub> =	194.42 in <sup>3</sup>	I <sub>x</sub> =	2245.51 in <sup>4</sup>	S <sub>bott.</sub> =	194.42 in <sup>3</sup>
C <sub>top</sub> =	9.8252 in	A =	31.3938 in <sup>2</sup>	C <sub>top</sub> =	9.8252 in	A =	31.3938 in <sup>2</sup>
C <sub>bottom</sub> =	11.5498 in	r <sub>x</sub> =	8.4574 in	C <sub>bottom</sub> =	11.5498 in	r <sub>x</sub> =	8.4574 in
J =	4.5225 in <sup>4</sup>	Z =	248.83 in <sup>3</sup>			Z =	248.83 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		10.8800	4.2750	46.5120	148.5483	2.1250	49.1300	197.6783
	Web		11.0138	4.2750	47.0838	0.2776	2.1250	49.7340	50.0116
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.6500	37.8394	39.6258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.6500	21.0675	21.1300
2 (Right)	Horizontal Leg		1.7500	6.8000	11.9000	1.7865	0.4000	0.2800	2.0665
	Vertical Leg		3.0000	4.8000	14.4000	0.0625	1.6000	7.6800	7.7425
3	Additional Plate		0.0000	4.2750	0.0000	0.0000	2.1250	0.0000	0.0000
<b>Total</b>			<b>31.39</b>		<b>134.21</b>	<b>152.52</b>		<b>165.73</b>	<b>318.25</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.4000 in	S <sub>right</sub> =	49.73 in <sup>3</sup>	x-bar =	6.4000 in	S <sub>right</sub> =	49.73 in <sup>3</sup>
I <sub>y</sub> =	318.25 in <sup>4</sup>	S <sub>left</sub> =	49.73 in <sup>3</sup>	I <sub>y</sub> =	318.25 in <sup>4</sup>	S <sub>left</sub> =	49.73 in <sup>3</sup>
C <sub>right</sub> =	6.4000 in	A =	31.3938 in <sup>2</sup>	C <sub>right</sub> =	6.4000 in	A =	31.3938 in <sup>2</sup>
C <sub>left</sub> =	6.4000 in	r <sub>y</sub> =	3.1839 in	C <sub>left</sub> =	6.4000 in	r <sub>y</sub> =	3.1839 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	746.49 k-ft	746.49 k-ft
V	344.81 k	344.81 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





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Job No. P402110046  
Sheet No. \_\_\_\_\_

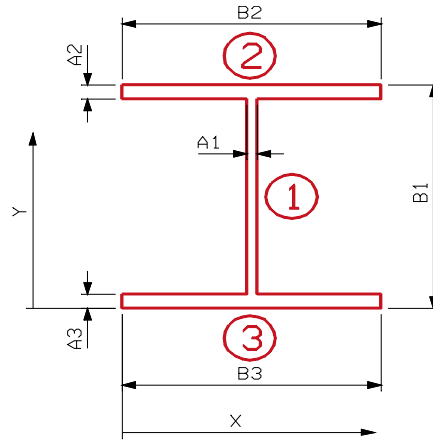
Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.7500$  in
- $B_1 = d = 23.0000$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.7500$  in

$d_o = 14.0000$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F2-17 @ FB E6**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		16.1250	11.5000	185.4375	621.1484	0.2181	0.7673	621.9157
2	Top Flange		6.0000	22.6250	135.7500	0.2813	11.3431	772.0006	772.2818
3	Bottom Flange		6.5625	0.3750	2.4609	0.3076	10.9069	780.6727	780.9804
<b>Total</b>			<b>28.69</b>		<b>323.65</b>	<b>621.74</b>		<b>1553.44</b>	<b>2175.18</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	11.2819	in	S <sub>top</sub> = 185.62 in <sup>3</sup>	y-bar =	11.2819	in	S <sub>top</sub> = 185.62 in <sup>3</sup>
I <sub>x</sub> =	2175.18	in <sup>4</sup>	S <sub>bott.</sub> = 192.80 in <sup>3</sup>	I <sub>x</sub> =	2175.18	in <sup>4</sup>	S <sub>bott.</sub> = 192.80 in <sup>3</sup>
C <sub>top</sub> =	11.7181	in	A = 28.6875 in <sup>2</sup>	C <sub>top</sub> =	11.7181	in	A = 28.6875 in <sup>2</sup>
C <sub>bottom</sub> =	11.2819	in	r <sub>x</sub> = 8.7077 in	C <sub>bottom</sub> =	11.2819	in	r <sub>x</sub> = 8.7077 in
J =	5.3789	in <sup>4</sup>	Z = 226.32 in <sup>3</sup>				Z = 226.32 in <sup>3</sup>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		16.1250	4.3750	70.5469	0.7559	0.0000	0.0000	0.7559
2	Top Flange		6.0000	4.3750	26.2500	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange		6.5625	4.3750	28.7109	41.8701	0.0000	0.0000	41.8701
<b>Total</b>			<b>28.69</b>		<b>125.51</b>	<b>74.63</b>		<b>0.00</b>	<b>74.63</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.3750	in	S <sub>right</sub> = 17.06 in <sup>3</sup>	x-bar =	4.3750	in	S <sub>right</sub> = 17.06 in <sup>3</sup>
I <sub>y</sub> =	74.63	in <sup>4</sup>	S <sub>left</sub> = 17.06 in <sup>3</sup>	I <sub>y</sub> =	74.63	in <sup>4</sup>	S <sub>left</sub> = 17.06 in <sup>3</sup>
C <sub>right</sub> =	4.3750	in	A = 28.6875 in <sup>2</sup>	C <sub>right</sub> =	4.3750	in	A = 28.6875 in <sup>2</sup>
C <sub>left</sub> =	4.3750	in	r <sub>y</sub> = 1.6129 in	C <sub>left</sub> =	4.3750	in	r <sub>y</sub> = 1.6129 in

Non-composite Capacities*		
	AB	AI
M	678.97 k-ft	678.97 k-ft
V	336.69 k	336.69 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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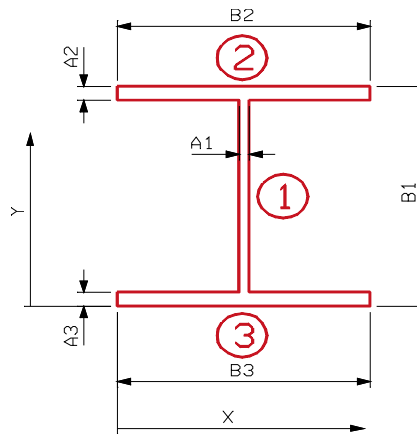
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 48.0000$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F2-17 Avg**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		17.4375	24.0000	418.5000	3142.0195	0.0000	0.0000	3142.0195
2	Top Flange		6.0000	47.6250	285.7500	0.2813	23.6250	3348.8438	3349.1250
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	23.6250	3348.8438	3349.1250
<b>Total</b>			<b>29.44</b>		<b>706.50</b>	<b>3142.58</b>		<b>6697.69</b>	<b>9840.27</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	24.0000	in	$S_{top} = 410.01$	in <sup>3</sup>	y-bar =	24.0000	in	$S_{top} = 410.01$	in <sup>3</sup>		
$I_x =$	9840.27	n <sup>4</sup>	$S_{bott.} = 410.01$	in <sup>3</sup>	$I_x =$	9840.27	n <sup>4</sup>	$S_{bott.} = 410.01$	in <sup>3</sup>		
$C_{top} =$	24.0000	in	A =	29.4375	in <sup>2</sup>	$C_{top} =$	24.0000	in	A =	29.4375	in <sup>2</sup>
$C_{bottom} =$	24.0000	in	$r_x =$	18.2832	in	$C_{bottom} =$	24.0000	in	$r_x =$	18.2832	in
J =	3.0674	in <sup>4</sup>	Z =	486.21	in <sup>3</sup>	Z =	486.21	in <sup>3</sup>			



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	17.4375	4.0000	69.7500	0.2043	0.0000	0.0000	0.2043
2	Top Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>		<b>29.44</b>		<b>117.75</b>	<b>64.20</b>		<b>0.00</b>	<b>64.20</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 16.05 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 16.05 in <sup>3</sup>
I <sub>y</sub> =	64.20	in <sup>4</sup>	S <sub>left</sub> = 16.05 in <sup>3</sup>	I <sub>y</sub> =	64.20	in <sup>4</sup>	S <sub>left</sub> = 16.05 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 29.4375 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 29.4375 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.4768 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.4768 in

Non-composite Capacities*		
	AB	AI
M	1230.03 k-ft	1230.03 k-ft
V	148.00 k	148.00 k

\*Noncompact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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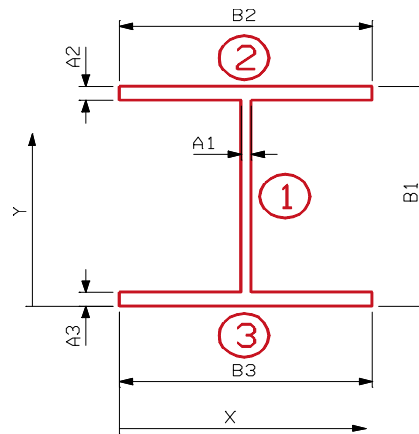
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 45.0000$  in
- $A_2 = t_f = 1.2500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 1.2500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



Fascia Stringer F1A-18 Avg

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		15.9375	22.5000	358.5938	2398.9258	0.0000	0.0000	2398.9258
2	Top Flange		10.0000	44.3750	443.7500	1.3021	21.8750	4785.1563	4786.4583
3	Bottom Flange		10.0000	0.6250	6.2500	1.3021	21.8750	4785.1563	4786.4583
<b>Total</b>			<b>35.94</b>		<b>808.59</b>	<b>2401.53</b>		<b>9570.31</b>	<b>11971.84</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	22.5000 in	$S_{top} =$	532.08 in <sup>3</sup>	y-bar =	22.5000 in	$S_{top} =$	532.08 in <sup>3</sup>
$I_x =$	11971.84 in <sup>4</sup>	$S_{bottom} =$	532.08 in <sup>3</sup>	$I_x =$	11971.84 in <sup>4</sup>	$S_{bottom} =$	532.08 in <sup>3</sup>
$C_{top} =$	22.5000 in	A =	35.9375 in <sup>2</sup>	$C_{top} =$	22.5000 in	A =	35.9375 in <sup>2</sup>
$C_{bottom} =$	22.5000 in	$r_x =$	18.2518 in	$C_{bottom} =$	22.5000 in	$r_x =$	18.2518 in
J =	11.1637 in <sup>4</sup>	Z =	606.84 in <sup>3</sup>			Z =	606.84 in <sup>3</sup>



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Date 3/16/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		15.9375	4.0000	63.7500	0.1868	0.0000	0.0000	0.1868
2	Top Flange		10.0000	4.0000	40.0000	53.3333	0.0000	0.0000	53.3333
3	Bottom Flange		10.0000	4.0000	40.0000	53.3333	0.0000	0.0000	53.3333
<b>Total</b>			<b>35.94</b>		<b>143.75</b>	<b>106.85</b>		<b>0.00</b>	<b>106.85</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	4.0000	in	S <sub>right</sub> =	26.71	in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> =	26.71	in <sup>3</sup>
I <sub>y</sub> =	106.85	in <sup>4</sup>	S <sub>left</sub> =	26.71	in <sup>3</sup>	I <sub>y</sub> =	106.85	in <sup>4</sup>	S <sub>left</sub> =	26.71	in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A =	35.9375	in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A =	35.9375	in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> =	1.7243	in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> =	1.7243	in

Non-composite Capacities*		
	AB	AI
M	1596.25 k-ft	1596.25 k-ft
V	161.93 k	161.93 k

\*Noncompact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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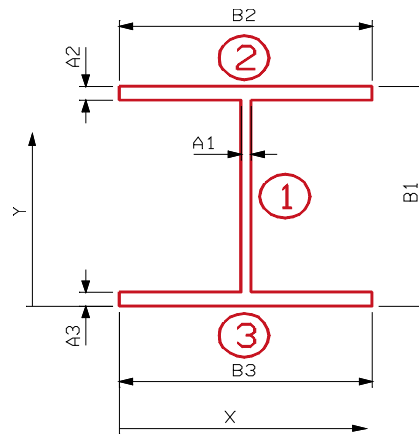
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 49.0000$  in
- $A_2 = t_f = 1.2500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 1.2500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F1B-18 Avg**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		17.4375	24.5000	427.2188	3142.0195	0.0000	0.0000	3142.0195
2	Top Flange		10.0000	48.3750	483.7500	1.3021	23.8750	5700.1563	5701.4583
3	Bottom Flange		10.0000	0.6250	6.2500	1.3021	23.8750	5700.1563	5701.4583
<b>Total</b>			<b>37.44</b>		<b>917.22</b>	<b>3144.62</b>		<b>11400.31</b>	<b>14544.94</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	24.5000 in	$S_{top} =$	593.67 in <sup>3</sup>	y-bar =	24.5000 in	$S_{top} =$	593.67 in <sup>3</sup>
$I_x =$	14544.94 in <sup>4</sup>	$S_{bottom} =$	593.67 in <sup>3</sup>	$I_x =$	14544.94 in <sup>4</sup>	$S_{bottom} =$	593.67 in <sup>3</sup>
$C_{top} =$	24.5000 in	A =	37.4375 in <sup>2</sup>	$C_{top} =$	24.5000 in	A =	37.4375 in <sup>2</sup>
$C_{bottom} =$	24.5000 in	$r_x =$	19.7107 in	$C_{bottom} =$	24.5000 in	$r_x =$	19.7107 in
J =	11.2340 in <sup>4</sup>	Z =	680.21 in <sup>3</sup>			Z =	680.21 in <sup>3</sup>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		17.4375	4.0000	69.7500	0.2043	0.0000	0.0000	0.2043
2	Top Flange		10.0000	4.0000	40.0000	53.3333	0.0000	0.0000	53.3333
3	Bottom Flange		10.0000	4.0000	40.0000	53.3333	0.0000	0.0000	53.3333
<b>Total</b>			<b>37.44</b>		<b>149.75</b>	<b>106.87</b>		<b>0.00</b>	<b>106.87</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	4.0000	in	S <sub>right</sub> =	26.72	in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> =	26.72	in <sup>3</sup>
I <sub>y</sub> =	106.87	in <sup>4</sup>	S <sub>left</sub> =	26.72	in <sup>3</sup>	I <sub>y</sub> =	106.87	in <sup>4</sup>	S <sub>left</sub> =	26.72	in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A =	37.4375	in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A =	37.4375	in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> =	1.6896	in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> =	1.6896	in

Non-composite Capacities*		
	AB	AI
M	1781.01 k-ft	1781.01 k-ft
V	148.00 k	148.00 k

\*Noncompact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear





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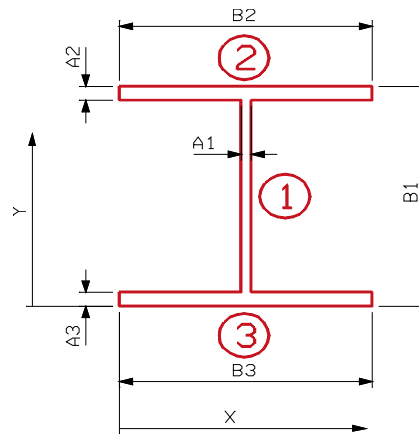
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 46.2500$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



Fascia Stringer F2A-18 Avg

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		16.7813	23.1250	388.0664	2800.4585	0.0000	0.0000	2800.4585
2	Top Flange		6.0000	45.8750	275.2500	0.2813	22.7500	3105.3750	3105.6563
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	22.7500	3105.3750	3105.6563
<b>Total</b>			<b>28.78</b>		<b>665.57</b>	<b>2801.02</b>		<b>6210.75</b>	<b>9011.77</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	23.1250	in	$S_{top} = 389.70$ in <sup>3</sup>	y-bar =	23.1250	in	$S_{top} = 389.70$ in <sup>3</sup>
$I_x =$	9011.77	in <sup>4</sup>	$S_{bottom} = 389.70$ in <sup>3</sup>	$I_x =$	9011.77	in <sup>4</sup>	$S_{bottom} = 389.70$ in <sup>3</sup>
$C_{top} =$	23.1250	in	A = 28.7813 in <sup>2</sup>	$C_{top} =$	23.1250	in	A = 28.7813 in <sup>2</sup>
$C_{bottom} =$	23.1250	in	$r_x = 17.6950$ in	$C_{bottom} =$	23.1250	in	$r_x = 17.6950$ in
J =	3.0366	in <sup>4</sup>	Z = 460.74 in <sup>3</sup>				Z = <b>460.74</b> in <sup>3</sup>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	16.7813	4.0000	67.1250	0.1967	0.0000	0.0000	0.1967
2	Top Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>		<b>28.78</b>		<b>115.13</b>	<b>64.20</b>		<b>0.00</b>	<b>64.20</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 16.05 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 16.05 in <sup>3</sup>
I <sub>y</sub> =	64.20	in <sup>4</sup>	S <sub>left</sub> = 16.05 in <sup>3</sup>	I <sub>y</sub> =	64.20	in <sup>4</sup>	S <sub>left</sub> = 16.05 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 28.7813 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 28.7813 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.4935 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.4935 in

Non-composite Capacities*		
	AB	AI
M	1169.09 k-ft	1169.09 k-ft
V	153.78 k	153.78 k

\*Noncompact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/26/2012

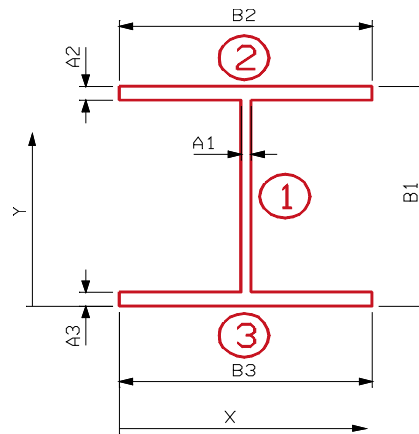
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 46.5000$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F2B-18 Avg**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		16.8750	23.2500	392.3438	2847.6563	0.0000	0.0000	2847.6563
2	Top Flange		6.0000	46.1250	276.7500	0.2813	22.8750	3139.5938	3139.8750
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	22.8750	3139.5938	3139.8750
<b>Total</b>			<b>28.88</b>		<b>671.34</b>	<b>2848.22</b>		<b>6279.19</b>	<b>9127.41</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	23.2500 in	$S_{top} =$	392.58 in <sup>3</sup>	y-bar =	23.2500 in	$S_{top} =$	392.58 in <sup>3</sup>
$I_x =$	9127.41 in <sup>4</sup>	$S_{bott.} =$	392.58 in <sup>3</sup>	$I_x =$	9127.41 in <sup>4</sup>	$S_{bott.} =$	392.58 in <sup>3</sup>
$C_{top} =$	23.2500 in	A =	28.8750 in <sup>2</sup>	$C_{top} =$	23.2500 in	A =	28.8750 in <sup>2</sup>
$C_{bottom} =$	23.2500 in	$r_x =$	17.7792 in	$C_{bottom} =$	23.2500 in	$r_x =$	17.7792 in
J =	3.0410 in <sup>4</sup>	Z =	464.34 in <sup>3</sup>			Z =	464.34 in <sup>3</sup>



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Date 3/16/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	16.8750	4.0000	67.5000	0.1978	0.0000	0.0000	0.1978
2	Top Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>		<b>28.88</b>		<b>115.50</b>	<b>64.20</b>		<b>0.00</b>	<b>64.20</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000 in	S <sub>right</sub> =	16.05 in <sup>3</sup>	x-bar =	4.0000 in	S <sub>right</sub> =	16.05 in <sup>3</sup>
I <sub>y</sub> =	64.20 in <sup>4</sup>	S <sub>left</sub> =	16.05 in <sup>3</sup>	I <sub>y</sub> =	64.20 in <sup>4</sup>	S <sub>left</sub> =	16.05 in <sup>3</sup>
C <sub>right</sub> =	4.0000 in	A =	28.8750 in <sup>2</sup>	C <sub>right</sub> =	4.0000 in	A =	28.8750 in <sup>2</sup>
C <sub>left</sub> =	4.0000 in	r <sub>y</sub> =	1.4911 in	C <sub>left</sub> =	4.0000 in	r <sub>y</sub> =	1.4911 in

Non-composite Capacities*		
	AB	AI
M	1177.73 k-ft	1177.73 k-ft
V	152.93 k	152.93 k

\*Noncompact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Job No. P402110046  
Sheet No. \_\_\_\_\_

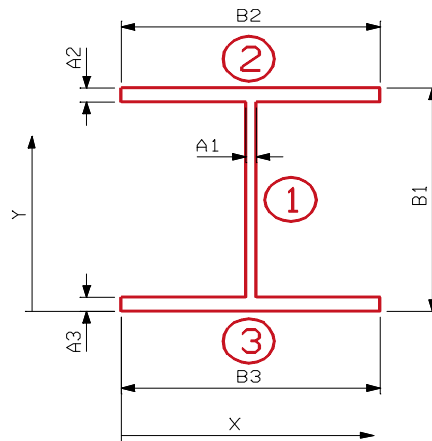
Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.7500$  in
- $B_1 = d = 25.1875$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.7500$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in

$d_o = N/A$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F1-20 @ FB G1**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		17.7656	12.5938	223.7358	830.6875	0.2266	0.9124	831.6000
2	Top Flange		6.5625	24.8125	162.8320	0.3076	11.9921	943.7604	944.0680
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	12.4454	929.3238	929.6051
<b>Total</b>			<b>30.33</b>		<b>388.82</b>	<b>831.28</b>		<b>1874.00</b>	<b>2705.27</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	12.8204	in	$S_{top} = 218.75$	$in^3$	y-bar =	12.8204	in	$S_{top} = 218.75$	$in^3$		
$I_x =$	2705.27	$in^4$	$S_{bott.} = 211.01$	$in^3$	$I_x =$	2705.27	$in^4$	$S_{bott.} = 211.01$	$in^3$		
$C_{top} =$	12.3671	in	A =	30.3281	$in^2$	$C_{top} =$	12.3671	in	A =	30.3281	$in^2$
$C_{bottom} =$	12.8204	in	$r_x =$	9.4446	in	$C_{bottom} =$	12.8204	in	$r_x =$	9.4446	in
J =	5.6865	$in^4$	Z =	258.60	$in^3$	Z =	258.60	$in^3$			



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Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		17.7656	4.3750	77.7246	0.8328	0.0000	0.0000	0.8328
2	Top Flange		6.5625	4.3750	28.7109	41.8701	0.0000	0.0000	41.8701
3	Bottom Flange		6.0000	4.3750	26.2500	32.0000	0.0000	0.0000	32.0000
<b>Total</b>			<b>30.33</b>		<b>132.69</b>	<b>74.70</b>		<b>0.00</b>	<b>74.70</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.3750	in	S <sub>right</sub> = 17.07 in <sup>3</sup>	x-bar =	4.3750	in	S <sub>right</sub> = 17.07 in <sup>3</sup>
I <sub>y</sub> =	74.70	in <sup>4</sup>	S <sub>left</sub> = 17.07 in <sup>3</sup>	I <sub>y</sub> =	74.70	in <sup>4</sup>	S <sub>left</sub> = 17.07 in <sup>3</sup>
C <sub>right</sub> =	4.3750	in	A = 30.3281 in <sup>2</sup>	C <sub>right</sub> =	4.3750	in	A = 30.3281 in <sup>2</sup>
C <sub>left</sub> =	4.3750	in	r <sub>y</sub> = 1.5694 in	C <sub>left</sub> =	4.3750	in	r <sub>y</sub> = 1.5694 in

Non-composite Capacities*		
	AB	AI
M	775.80 k-ft	775.80 k-ft
V	370.95 k	370.95 k

\*Compact Section

F <sub>y</sub> =	36.00 ksi
------------------	-----------

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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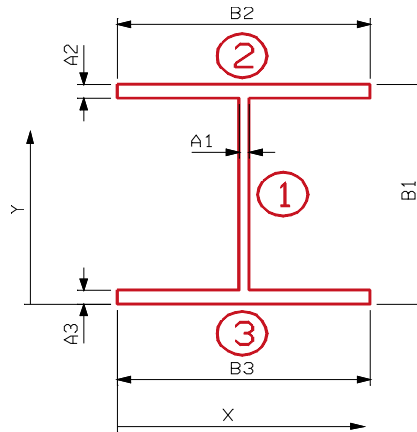
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 50.9688$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



Fascia Stringer F1-20 Avg

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	18.5508	25.4844	472.7551	3783.0565	0.0000	0.0000	3783.0565
2	Top Flange	6.0000	50.5938	303.5625	0.2813	25.1094	3782.8843	3783.1655
3	Bottom Flange	6.0000	0.3750	2.2500	0.2813	25.1094	3782.8843	3783.1655
<b>Total</b>		<b>30.55</b>		<b>778.57</b>	<b>3783.62</b>		<b>7565.77</b>	<b>11349.39</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	25.4844 in	$S_{top} =$	445.35 in <sup>3</sup>	y-bar =	25.4844 in	$S_{top} =$	445.35 in <sup>3</sup>
$I_x =$	11349.39 in <sup>4</sup>	$S_{bott.} =$	445.35 in <sup>3</sup>	$I_x =$	11349.39 in <sup>4</sup>	$S_{bott.} =$	445.35 in <sup>3</sup>
$C_{top} =$	25.4844 in	A =	30.5508 in <sup>2</sup>	$C_{top} =$	25.4844 in	A =	30.5508 in <sup>2</sup>
$C_{bottom} =$	25.4844 in	$r_x =$	19.2741 in	$C_{bottom} =$	25.4844 in	$r_x =$	19.2741 in
J =	3.1196 in <sup>4</sup>	Z =	530.73 in <sup>3</sup>			Z =	530.73 in <sup>3</sup>



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Date 3/16/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	18.5508	4.0000	74.2031	0.2174	0.0000	0.0000	0.2174
2	Top Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>		<b>30.55</b>		<b>122.20</b>	<b>64.22</b>		<b>0.00</b>	<b>64.22</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 16.05 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 16.05 in <sup>3</sup>
I <sub>y</sub> =	64.22	in <sup>4</sup>	S <sub>left</sub> = 16.05 in <sup>3</sup>	I <sub>y</sub> =	64.22	in <sup>4</sup>	S <sub>left</sub> = 16.05 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 30.5508 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 30.5508 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.4498 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.4498 in

Non-composite Capacities*		
	AB	AI
M	1336.04 k-ft	1336.04 k-ft
V	139.11 k	139.11 k

\*Noncompact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear





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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x101	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	19.1875 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	19.6875 in
$B_3 = t =$	0.5000 in	$GAP =$	0.5000 in

\*select from dropdown list

Coped Stringer S2-20 @ FB G1

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	19.2875	189.7890	0.5248	8.8512	770.9077	771.4325
	Web	9.1938	9.6938	89.1219	259.0340	0.7425	5.0688	264.1029
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	10.1863	363.1603	363.2332
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	7.4363	331.7887	349.7887
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	9.9363	0.0000	0.0000
<b>Total</b>		<b>28.53</b>		<b>297.79</b>	<b>277.63</b>		<b>1470.93</b>	<b>1748.56</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	10.4363 in	S <sub>top</sub> =	189.01 in <sup>3</sup>	y-bar =	10.4363 in	S <sub>top</sub> =	189.01 in <sup>3</sup>
I <sub>x</sub> =	1748.56 in <sup>4</sup>	S <sub>bottom</sub> =	167.55 in <sup>3</sup>	I <sub>x</sub> =	1748.56 in <sup>4</sup>	S <sub>bottom</sub> =	167.55 in <sup>3</sup>
C <sub>top</sub> =	9.2512 in	A =	28.5338 in <sup>2</sup>	C <sub>top</sub> =	9.2512 in	A =	28.5338 in <sup>2</sup>
C <sub>bottom</sub> =	10.4363 in	r <sub>x</sub> =	7.8282 in	C <sub>bottom</sub> =	10.4363 in	r <sub>x</sub> =	7.8282 in
J =	3.6570 in <sup>4</sup>	Z =	209.82 in <sup>3</sup>	Z =	209.82		in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	4.2500	41.8200	124.0578	1.9000	35.5224	159.5802
	Web		9.1938	4.2500	39.0734	0.1915	1.9000	33.1894	33.3810
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.4000	33.8800	35.6665
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.4000	17.2800	17.3425
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.6000	0.6300	2.4165
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.4000	5.8800	5.9425
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	1.9000	0.0000	0.0000
<b>Total</b>			<b>28.53</b>		<b>121.27</b>	<b>127.95</b>		<b>126.38</b>	<b>254.33</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.1500 in	S <sub>right</sub> =	41.35 in <sup>3</sup>	x-bar =	6.1500 in	S <sub>right</sub> =	41.35 in <sup>3</sup>
I <sub>y</sub> =	254.33 in <sup>4</sup>	S <sub>left</sub> =	41.35 in <sup>3</sup>	I <sub>y</sub> =	254.33 in <sup>4</sup>	S <sub>left</sub> =	41.35 in <sup>3</sup>
C <sub>right</sub> =	6.1500 in	A =	28.5338 in <sup>2</sup>	C <sub>right</sub> =	6.1500 in	A =	28.5338 in <sup>2</sup>
C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	2.9855 in	C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	2.9855 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	629.46 k-ft	629.46 k-ft
V	306.81 k	306.81 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x101	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	18.0000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	18.3750 in
$B_3 = t =$	0.5000 in	$Gap =$	0.3750 in

\*select from dropdown list

Coped Stringer S2-20 @ FB G2

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	17.9750	176.8740	0.5248	8.2064	662.6788	663.2036
	Web	8.6000	8.9750	77.1850	212.0187	0.7936	5.4160	217.4346
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	9.5186	317.1115	317.1844
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	6.7686	274.8817	292.8817
3	Additional Plate	0.0000	0.3750	0.0000	0.0000	9.3936	0.0000	0.0000
<b>Total</b>		<b>27.94</b>		<b>272.93</b>	<b>230.62</b>		<b>1260.09</b>	<b>1490.70</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	9.7686 in	S <sub>top</sub> =	173.21 in <sup>3</sup>	y-bar =	9.7686 in	S <sub>top</sub> =	173.21 in <sup>3</sup>
I <sub>x</sub> =	1490.70 in <sup>4</sup>	S <sub>bott.</sub> =	152.60 in <sup>3</sup>	I <sub>x</sub> =	1490.70 in <sup>4</sup>	S <sub>bott.</sub> =	152.60 in <sup>3</sup>
C <sub>top</sub> =	8.6064 in	A =	27.9400 in <sup>2</sup>	C <sub>top</sub> =	8.6064 in	A =	27.9400 in <sup>2</sup>
C <sub>bottom</sub> =	9.7686 in	r <sub>x</sub> =	7.3044 in	C <sub>bottom</sub> =	9.7686 in	r <sub>x</sub> =	7.3044 in
J =	3.6075 in <sup>4</sup>	Z =	191.87 in <sup>3</sup>	Z =	191.87 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	4.2500	41.8200	124.0578	1.9000	35.5224	159.5802
	Web		8.6000	4.2500	36.5500	0.1792	1.9000	31.0460	31.2252
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.4000	33.8800	35.6665
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.4000	17.2800	17.3425
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.6000	0.6300	2.4165
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.4000	5.8800	5.9425
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	1.9000	0.0000	0.0000
<b>Total</b>			<b>27.94</b>		<b>118.75</b>	<b>127.93</b>		<b>124.24</b>	<b>252.17</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.1500 in	S <sub>right</sub> =	41.00 in <sup>3</sup>	x-bar =	6.1500 in	S <sub>right</sub> =	41.00 in <sup>3</sup>
I <sub>y</sub> =	252.17 in <sup>4</sup>	S <sub>left</sub> =	41.00 in <sup>3</sup>	I <sub>y</sub> =	252.17 in <sup>4</sup>	S <sub>left</sub> =	41.00 in <sup>3</sup>
C <sub>right</sub> =	6.1500 in	A =	27.9400 in <sup>2</sup>	C <sub>right</sub> =	6.1500 in	A =	27.9400 in <sup>2</sup>
C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.0043 in	C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.0043 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	575.61 k-ft	575.61 k-ft
V	294.41 k	294.41 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x101	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	19.2500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	19.7500 in
$B_3 = t =$	0.5000 in	$GAP =$	0.5000 in

\*select from dropdown list

Coped Stringer S3-20 @ FB G1

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	19.3500	190.4040	0.5248	8.8829	776.4378	776.9626
	Web	9.2250	9.7250	89.7131	261.6844	0.7421	5.0800	266.7645
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	10.2171	365.3605	365.4334
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	7.4671	334.5437	352.5437
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	9.9671	0.0000	0.0000
<b>Total</b>		<b>28.57</b>		<b>298.99</b>	<b>280.28</b>		<b>1481.42</b>	<b>1761.70</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	10.4671 in	S <sub>top</sub> =	189.78 in <sup>3</sup>	y-bar =	10.4671 in	S <sub>top</sub> =	189.78 in <sup>3</sup>
I <sub>x</sub> =	1761.70 in <sup>4</sup>	S <sub>bottom</sub> =	168.31 in <sup>3</sup>	I <sub>x</sub> =	1761.70 in <sup>4</sup>	S <sub>bottom</sub> =	168.31 in <sup>3</sup>
C <sub>top</sub> =	9.2829 in	A =	28.5650 in <sup>2</sup>	C <sub>top</sub> =	9.2829 in	A =	28.5650 in <sup>2</sup>
C <sub>bottom</sub> =	10.4671 in	r <sub>x</sub> =	7.8532 in	C <sub>bottom</sub> =	10.4671 in	r <sub>x</sub> =	7.8532 in
J =	3.6596 in <sup>4</sup>	Z =	210.72 in <sup>3</sup>	Z =	210.72 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	4.2500	41.8200	124.0578	1.9000	35.5224	159.5802
	Web		9.2250	4.2500	39.2063	0.1922	1.9000	33.3023	33.4944
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.4000	33.8800	35.6665
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.4000	17.2800	17.3425
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.6000	0.6300	2.4165
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.4000	5.8800	5.9425
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	1.9000	0.0000	0.0000
<b>Total</b>			<b>28.57</b>		<b>121.40</b>	<b>127.95</b>		<b>126.49</b>	<b>254.44</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.1500 in	S <sub>right</sub> =	41.37 in <sup>3</sup>	x-bar =	6.1500 in	S <sub>right</sub> =	41.37 in <sup>3</sup>
I <sub>y</sub> =	254.44 in <sup>4</sup>	S <sub>left</sub> =	41.37 in <sup>3</sup>	I <sub>y</sub> =	254.44 in <sup>4</sup>	S <sub>left</sub> =	41.37 in <sup>3</sup>
C <sub>right</sub> =	6.1500 in	A =	28.5650 in <sup>2</sup>	C <sub>right</sub> =	6.1500 in	A =	28.5650 in <sup>2</sup>
C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	2.9845 in	C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	2.9845 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	632.16 k-ft	632.16 k-ft
V	307.46 k	307.46 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



Made By CTG  
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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section*	W21x101	Bottom Angles:	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	18.0000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	18.3750 in
$B_3 = t =$	0.5000 in	Gap =	0.3750 in

\*select from dropdown list

Coped Stringer S3-20 @ FB G2

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	17.9750	176.8740	0.5248	8.2064	662.6788	663.2036
	Web	8.6000	8.9750	77.1850	212.0187	0.7936	5.4160	217.4346
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	9.5186	317.1115	317.1844
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	6.7686	274.8817	292.8817
3	Additional Plate	0.0000	0.3750	0.0000	0.0000	9.3936	0.0000	0.0000
<b>Total</b>		<b>27.94</b>		<b>272.93</b>	<b>230.62</b>		<b>1260.09</b>	<b>1490.70</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	9.7686 in	S <sub>top</sub> =	173.21 in <sup>3</sup>	y-bar =	9.7686 in	S <sub>top</sub> =	173.21 in <sup>3</sup>
I <sub>x</sub> =	1490.70 in <sup>4</sup>	S <sub>bott.</sub> =	152.60 in <sup>3</sup>	I <sub>x</sub> =	1490.70 in <sup>4</sup>	S <sub>bott.</sub> =	152.60 in <sup>3</sup>
C <sub>top</sub> =	8.6064 in	A =	27.9400 in <sup>2</sup>	C <sub>top</sub> =	8.6064 in	A =	27.9400 in <sup>2</sup>
C <sub>bottom</sub> =	9.7686 in	r <sub>x</sub> =	7.3044 in	C <sub>bottom</sub> =	9.7686 in	r <sub>x</sub> =	7.3044 in
J =	3.6075 in <sup>4</sup>	Z =	191.87 in <sup>3</sup>			Z =	191.87 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	4.2500	41.8200	124.0578	1.9000	35.5224	159.5802
	Web		8.6000	4.2500	36.5500	0.1792	1.9000	31.0460	31.2252
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.4000	33.8800	35.6665
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.4000	17.2800	17.3425
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.6000	0.6300	2.4165
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.4000	5.8800	5.9425
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	1.9000	0.0000	0.0000
<b>Total</b>			<b>27.94</b>		<b>118.75</b>	<b>127.93</b>		<b>124.24</b>	<b>252.17</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.1500 in	S <sub>right</sub> =	41.00 in <sup>3</sup>	x-bar =	6.1500 in	S <sub>right</sub> =	41.00 in <sup>3</sup>
I <sub>y</sub> =	252.17 in <sup>4</sup>	S <sub>left</sub> =	41.00 in <sup>3</sup>	I <sub>y</sub> =	252.17 in <sup>4</sup>	S <sub>left</sub> =	41.00 in <sup>3</sup>
C <sub>right</sub> =	6.1500 in	A =	27.9400 in <sup>2</sup>	C <sub>right</sub> =	6.1500 in	A =	27.9400 in <sup>2</sup>
C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.0043 in	C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.0043 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	575.61 k-ft	575.61 k-ft
V	294.41 k	294.41 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x101	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	18.0000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	18.5000 in
$B_3 = t =$	0.5000 in	$Gap =$	0.5000 in

\*select from dropdown list

Coped Stringer S4-20 @ FB G1

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	18.1000	178.1040	0.5248	8.2489	669.5607	670.0855
	Web	8.6000	9.1000	78.2600	212.0187	0.7511	4.8514	216.8700
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	9.6011	322.6322	322.7051
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	6.8511	281.6233	299.6233
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	9.3511	0.0000	0.0000
<b>Total</b>		<b>27.94</b>		<b>275.24</b>	<b>230.62</b>		<b>1278.67</b>	<b>1509.28</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	9.8511 in	S <sub>top</sub> =	174.51 in <sup>3</sup>	y-bar =	9.8511 in	S <sub>top</sub> =	174.51 in <sup>3</sup>
I <sub>x</sub> =	1509.28 in <sup>4</sup>	S <sub>bottom</sub> =	153.21 in <sup>3</sup>	I <sub>x</sub> =	1509.28 in <sup>4</sup>	S <sub>bottom</sub> =	153.21 in <sup>3</sup>
C <sub>top</sub> =	8.6489 in	A =	27.9400 in <sup>2</sup>	C <sub>top</sub> =	8.6489 in	A =	27.9400 in <sup>2</sup>
C <sub>bottom</sub> =	9.8511 in	r <sub>x</sub> =	7.3497 in	C <sub>bottom</sub> =	9.8511 in	r <sub>x</sub> =	7.3497 in
J =	3.6075 in <sup>4</sup>	Z =	193.06 in <sup>3</sup>	Z =	193.06 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	4.2500	41.8200	124.0578	1.9000	35.5224	159.5802
	Web		8.6000	4.2500	36.5500	0.1792	1.9000	31.0460	31.2252
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.4000	33.8800	35.6665
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.4000	17.2800	17.3425
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.6000	0.6300	2.4165
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.4000	5.8800	5.9425
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	1.9000	0.0000	0.0000
<b>Total</b>			<b>27.94</b>		<b>118.75</b>	<b>127.93</b>		<b>124.24</b>	<b>252.17</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.1500 in	S <sub>right</sub> =	41.00 in <sup>3</sup>	x-bar =	6.1500 in	S <sub>right</sub> =	41.00 in <sup>3</sup>
I <sub>y</sub> =	252.17 in <sup>4</sup>	S <sub>left</sub> =	41.00 in <sup>3</sup>	I <sub>y</sub> =	252.17 in <sup>4</sup>	S <sub>left</sub> =	41.00 in <sup>3</sup>
C <sub>right</sub> =	6.1500 in	A =	27.9400 in <sup>2</sup>	C <sub>right</sub> =	6.1500 in	A =	27.9400 in <sup>2</sup>
C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.0043 in	C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.0043 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	579.18 k-ft	579.18 k-ft
V	294.41 k	294.41 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



Made By CTG  
Checked By DMP

Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x101	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	18.0000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	18.3750 in
$B_3 = t =$	0.5000 in	$Gap =$	0.3750 in

\*select from dropdown list

Coped Stringer S4-20 @ FB G2

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	17.9750	176.8740	0.5248	8.2064	662.6788	663.2036
	Web	8.6000	8.9750	77.1850	212.0187	0.7936	5.4160	217.4346
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	9.5186	317.1115	317.1844
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	6.7686	274.8817	292.8817
3	Additional Plate	0.0000	0.3750	0.0000	0.0000	9.3936	0.0000	0.0000
<b>Total</b>		<b>27.94</b>		<b>272.93</b>	<b>230.62</b>		<b>1260.09</b>	<b>1490.70</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



Made By CTG  
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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	9.7686 in	S <sub>top</sub> =	173.21 in <sup>3</sup>	y-bar =	9.7686 in	S <sub>top</sub> =	173.21 in <sup>3</sup>
I <sub>x</sub> =	1490.70 in <sup>4</sup>	S <sub>bott.</sub> =	152.60 in <sup>3</sup>	I <sub>x</sub> =	1490.70 in <sup>4</sup>	S <sub>bott.</sub> =	152.60 in <sup>3</sup>
C <sub>top</sub> =	8.6064 in	A =	27.9400 in <sup>2</sup>	C <sub>top</sub> =	8.6064 in	A =	27.9400 in <sup>2</sup>
C <sub>bottom</sub> =	9.7686 in	r <sub>x</sub> =	7.3044 in	C <sub>bottom</sub> =	9.7686 in	r <sub>x</sub> =	7.3044 in
J =	3.6075 in <sup>4</sup>	Z =	191.87 in <sup>3</sup>	Z =	191.87 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	4.2500	41.8200	124.0578	1.9000	35.5224	159.5802
	Web		8.6000	4.2500	36.5500	0.1792	1.9000	31.0460	31.2252
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.4000	33.8800	35.6665
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.4000	17.2800	17.3425
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.6000	0.6300	2.4165
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.4000	5.8800	5.9425
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	1.9000	0.0000	0.0000
<b>Total</b>			<b>27.94</b>		<b>118.75</b>	<b>127.93</b>		<b>124.24</b>	<b>252.17</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.1500 in	S <sub>right</sub> =	41.00 in <sup>3</sup>	x-bar =	6.1500 in	S <sub>right</sub> =	41.00 in <sup>3</sup>
I <sub>y</sub> =	252.17 in <sup>4</sup>	S <sub>left</sub> =	41.00 in <sup>3</sup>	I <sub>y</sub> =	252.17 in <sup>4</sup>	S <sub>left</sub> =	41.00 in <sup>3</sup>
C <sub>right</sub> =	6.1500 in	A =	27.9400 in <sup>2</sup>	C <sub>right</sub> =	6.1500 in	A =	27.9400 in <sup>2</sup>
C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.0043 in	C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.0043 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	575.61 k-ft	575.61 k-ft
V	294.41 k	294.41 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



Made By CTG  
Checked By DMP

Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section*	W21x101	Bottom Angles:	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	16.8125 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	17.3125 in
$B_3 = t =$	0.5000 in	Gap =	0.5000 in

\*select from dropdown list

Coped Stringer S5-20 @ FB G1

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	16.9125	166.4190	0.5248	7.6463	575.2971	575.8219
	Web	8.0063	8.5063	68.1032	171.0670	0.7600	4.6244	175.6914
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	9.0162	284.5246	284.5975
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	6.2662	235.5953	253.5953
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	8.7662	0.0000	0.0000
<b>Total</b>		<b>27.35</b>		<b>253.40</b>	<b>189.66</b>		<b>1100.04</b>	<b>1289.71</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	9.2662 in	S <sub>top</sub> =	160.29 in <sup>3</sup>	y-bar =	9.2662 in	S <sub>top</sub> =	160.29 in <sup>3</sup>
I <sub>x</sub> =	1289.71 in <sup>4</sup>	S <sub>bottom</sub> =	139.18 in <sup>3</sup>	I <sub>x</sub> =	1289.71 in <sup>4</sup>	S <sub>bottom</sub> =	139.18 in <sup>3</sup>
C <sub>top</sub> =	8.0463 in	A =	27.3463 in <sup>2</sup>	C <sub>top</sub> =	8.0463 in	A =	27.3463 in <sup>2</sup>
C <sub>bottom</sub> =	9.2662 in	r <sub>x</sub> =	6.8675 in	C <sub>bottom</sub> =	9.2662 in	r <sub>x</sub> =	6.8675 in
J =	3.5581 in <sup>4</sup>	Z =	176.64 in <sup>3</sup>	Z =	176.64 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	4.2500	41.8200	124.0578	1.9000	35.5224	159.5802
	Web		8.0063	4.2500	34.0266	0.1668	1.9000	28.9026	29.0694
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.4000	33.8800	35.6665
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.4000	17.2800	17.3425
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.6000	0.6300	2.4165
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.4000	5.8800	5.9425
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	1.9000	0.0000	0.0000
<b>Total</b>			<b>27.35</b>		<b>116.22</b>	<b>127.92</b>		<b>122.09</b>	<b>250.02</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.1500 in	S <sub>right</sub> =	40.65 in <sup>3</sup>	x-bar =	6.1500 in	S <sub>right</sub> =	40.65 in <sup>3</sup>
I <sub>y</sub> =	250.02 in <sup>4</sup>	S <sub>left</sub> =	40.65 in <sup>3</sup>	I <sub>y</sub> =	250.02 in <sup>4</sup>	S <sub>left</sub> =	40.65 in <sup>3</sup>
C <sub>right</sub> =	6.1500 in	A =	27.3463 in <sup>2</sup>	C <sub>right</sub> =	6.1500 in	A =	27.3463 in <sup>2</sup>
C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.0237 in	C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.0237 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	529.92 k-ft	529.92 k-ft
V	282.01 k	282.01 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x101	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	18.0000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	18.3750 in
$B_3 = t =$	0.5000 in	$Gap =$	0.3750 in

\*select from dropdown list

Coped Stringer S5-20 @ FB G2

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	17.9750	176.8740	0.5248	8.2064	662.6788	663.2036
	Web	8.6000	8.9750	77.1850	212.0187	0.7936	5.4160	217.4346
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	9.5186	317.1115	317.1844
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	6.7686	274.8817	292.8817
3	Additional Plate	0.0000	0.3750	0.0000	0.0000	9.3936	0.0000	0.0000
<b>Total</b>		<b>27.94</b>		<b>272.93</b>	<b>230.62</b>		<b>1260.09</b>	<b>1490.70</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	9.7686 in	S <sub>top</sub> =	173.21 in <sup>3</sup>	y-bar =	9.7686 in	S <sub>top</sub> =	173.21 in <sup>3</sup>
I <sub>x</sub> =	1490.70 in <sup>4</sup>	S <sub>bott.</sub> =	152.60 in <sup>3</sup>	I <sub>x</sub> =	1490.70 in <sup>4</sup>	S <sub>bott.</sub> =	152.60 in <sup>3</sup>
C <sub>top</sub> =	8.6064 in	A =	27.9400 in <sup>2</sup>	C <sub>top</sub> =	8.6064 in	A =	27.9400 in <sup>2</sup>
C <sub>bottom</sub> =	9.7686 in	r <sub>x</sub> =	7.3044 in	C <sub>bottom</sub> =	9.7686 in	r <sub>x</sub> =	7.3044 in
J =	3.6075 in <sup>4</sup>	Z =	191.87 in <sup>3</sup>			Z =	191.87 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	4.2500	41.8200	124.0578	1.9000	35.5224	159.5802
	Web		8.6000	4.2500	36.5500	0.1792	1.9000	31.0460	31.2252
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.4000	33.8800	35.6665
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.4000	17.2800	17.3425
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.6000	0.6300	2.4165
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.4000	5.8800	5.9425
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	1.9000	0.0000	0.0000
<b>Total</b>			<b>27.94</b>		<b>118.75</b>	<b>127.93</b>		<b>124.24</b>	<b>252.17</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.1500 in	S <sub>right</sub> =	41.00 in <sup>3</sup>	x-bar =	6.1500 in	S <sub>right</sub> =	41.00 in <sup>3</sup>
I <sub>y</sub> =	252.17 in <sup>4</sup>	S <sub>left</sub> =	41.00 in <sup>3</sup>	I <sub>y</sub> =	252.17 in <sup>4</sup>	S <sub>left</sub> =	41.00 in <sup>3</sup>
C <sub>right</sub> =	6.1500 in	A =	27.9400 in <sup>2</sup>	C <sub>right</sub> =	6.1500 in	A =	27.9400 in <sup>2</sup>
C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.0043 in	C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.0043 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	575.61 k-ft	575.61 k-ft
V	294.41 k	294.41 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x101	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	15.6250 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	16.1250 in
$B_3 = t =$	0.5000 in	$GAP =$	0.5000 in

\*select from dropdown list

Coped Stringer S6-20 @ FB G1

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	15.7250	154.7340	0.5248	7.0432	488.1267	488.6515
	Web	7.4125	7.9125	58.6514	135.7603	0.7693	4.3871	140.1474
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	8.4318	248.8346	248.9075
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	5.6818	193.6985	211.6985
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	8.1818	0.0000	0.0000
<b>Total</b>		<b>26.75</b>		<b>232.26</b>	<b>154.36</b>		<b>935.05</b>	<b>1089.41</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



Made By CTG  
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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	8.6818	in	S <sub>top</sub> =	146.36	in <sup>3</sup>	y-bar =	8.6818	in	S <sub>top</sub> =	146.36	in <sup>3</sup>
I <sub>x</sub> =	1089.41	in <sup>4</sup>	S <sub>bott.</sub> =	125.48	in <sup>3</sup>	I <sub>x</sub> =	1089.41	in <sup>4</sup>	S <sub>bott.</sub> =	125.48	in <sup>3</sup>
C <sub>top</sub> =	7.4432	in	A =	26.7525	in <sup>2</sup>	C <sub>top</sub> =	7.4432	in	A =	26.7525	in <sup>2</sup>
C <sub>bottom</sub> =	8.6818	in	r <sub>x</sub> =	6.3813	in	C <sub>bottom</sub> =	8.6818	in	r <sub>x</sub> =	6.3813	in
J =	3.5086	in <sup>4</sup>	Z =	160.58	in <sup>3</sup>	Z =	160.58	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	4.2500	41.8200	124.0578	1.9000	35.5224	159.5802
	Web		7.4125	4.2500	31.5031	0.1544	1.9000	26.7591	26.9136
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.4000	33.8800	35.6665
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.4000	17.2800	17.3425
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.6000	0.6300	2.4165
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.4000	5.8800	5.9425
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	1.9000	0.0000	0.0000
<b>Total</b>			<b>26.75</b>		<b>113.70</b>	<b>127.91</b>		<b>119.95</b>	<b>247.86</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	6.1500	in	S <sub>right</sub> =	40.30	in <sup>3</sup>	x-bar =	6.1500	in	S <sub>right</sub> =	40.30	in <sup>3</sup>
I <sub>y</sub> =	247.86	in <sup>4</sup>	S <sub>left</sub> =	40.30	in <sup>3</sup>	I <sub>y</sub> =	247.86	in <sup>4</sup>	S <sub>left</sub> =	40.30	in <sup>3</sup>
C <sub>right</sub> =	6.1500	in	A =	26.7525	in <sup>2</sup>	C <sub>right</sub> =	6.1500	in	A =	26.7525	in <sup>2</sup>
C <sub>left</sub> =	6.1500	in	r <sub>y</sub> =	3.0438	in	C <sub>left</sub> =	6.1500	in	r <sub>y</sub> =	3.0438	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	481.74 k-ft	481.74 k-ft
V	269.61 k	269.61 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



Made By CTG  
Checked By DMP

Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section*	W21x101	Bottom Angles:	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	18.0000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	18.3750 in
$B_3 = t =$	0.5000 in	Gap =	0.3750 in

\*select from dropdown list

Coped Stringer S6-20 @ FB G2

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	17.9750	176.8740	0.5248	8.2064	662.6788	663.2036
	Web	8.6000	8.9750	77.1850	212.0187	0.7936	5.4160	217.4346
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	9.5186	317.1115	317.1844
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	6.7686	274.8817	292.8817
3	Additional Plate	0.0000	0.3750	0.0000	0.0000	9.3936	0.0000	0.0000
<b>Total</b>		<b>27.94</b>		<b>272.93</b>	<b>230.62</b>		<b>1260.09</b>	<b>1490.70</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	9.7686 in	S <sub>top</sub> =	173.21 in <sup>3</sup>	y-bar =	9.7686 in	S <sub>top</sub> =	173.21 in <sup>3</sup>
I <sub>x</sub> =	1490.70 in <sup>4</sup>	S <sub>bott.</sub> =	152.60 in <sup>3</sup>	I <sub>x</sub> =	1490.70 in <sup>4</sup>	S <sub>bott.</sub> =	152.60 in <sup>3</sup>
C <sub>top</sub> =	8.6064 in	A =	27.9400 in <sup>2</sup>	C <sub>top</sub> =	8.6064 in	A =	27.9400 in <sup>2</sup>
C <sub>bottom</sub> =	9.7686 in	r <sub>x</sub> =	7.3044 in	C <sub>bottom</sub> =	9.7686 in	r <sub>x</sub> =	7.3044 in
J =	3.6075 in <sup>4</sup>	Z =	191.87 in <sup>3</sup>			Z =	191.87 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	4.2500	41.8200	124.0578	1.9000	35.5224	159.5802
	Web		8.6000	4.2500	36.5500	0.1792	1.9000	31.0460	31.2252
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.4000	33.8800	35.6665
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.4000	17.2800	17.3425
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.6000	0.6300	2.4165
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.4000	5.8800	5.9425
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	1.9000	0.0000	0.0000
<b>Total</b>			<b>27.94</b>		<b>118.75</b>	<b>127.93</b>		<b>124.24</b>	<b>252.17</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.1500 in	S <sub>right</sub> =	41.00 in <sup>3</sup>	x-bar =	6.1500 in	S <sub>right</sub> =	41.00 in <sup>3</sup>
I <sub>y</sub> =	252.17 in <sup>4</sup>	S <sub>left</sub> =	41.00 in <sup>3</sup>	I <sub>y</sub> =	252.17 in <sup>4</sup>	S <sub>left</sub> =	41.00 in <sup>3</sup>
C <sub>right</sub> =	6.1500 in	A =	27.9400 in <sup>2</sup>	C <sub>right</sub> =	6.1500 in	A =	27.9400 in <sup>2</sup>
C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.0043 in	C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.0043 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	575.61 k-ft	575.61 k-ft
V	294.41 k	294.41 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x101	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	16.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	17.1250 in
$B_3 = t =$	0.5000 in	$GAP =$	0.6250 in

\*select from dropdown list

Coped Stringer S7-20 @ FB G1

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	16.7250	164.5740	0.5248	7.5313	558.1238	558.6486
	Web	7.8500	8.4750	66.5288	161.2455	0.7187	4.0552	165.3007
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	8.9437	279.9666	280.0395
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	6.1937	230.1744	248.1744
3	Additional Plate	0.0000	0.6250	0.0000	0.0000	8.5687	0.0000	0.0000
<b>Total</b>		<b>27.19</b>		<b>249.98</b>	<b>179.84</b>		<b>1072.32</b>	<b>1252.16</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	9.1937 in	S <sub>top</sub> =	157.88 in <sup>3</sup>	y-bar =	9.1937 in	S <sub>top</sub> =	157.88 in <sup>3</sup>
I <sub>x</sub> =	1252.16 in <sup>4</sup>	S <sub>bottom</sub> =	136.20 in <sup>3</sup>	I <sub>x</sub> =	1252.16 in <sup>4</sup>	S <sub>bottom</sub> =	136.20 in <sup>3</sup>
C <sub>top</sub> =	7.9313 in	A =	27.1900 in <sup>2</sup>	C <sub>top</sub> =	7.9313 in	A =	27.1900 in <sup>2</sup>
C <sub>bottom</sub> =	9.1937 in	r <sub>x</sub> =	6.7862 in	C <sub>bottom</sub> =	9.1937 in	r <sub>x</sub> =	6.7862 in
J =	3.5450 in <sup>4</sup>	Z =	173.57 in <sup>3</sup>			Z =	173.57 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	4.2500	41.8200	124.0578	1.9000	35.5224	159.5802
	Web		7.8500	4.2500	33.3625	0.1635	1.9000	28.3385	28.5020
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.4000	33.8800	35.6665
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.4000	17.2800	17.3425
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.6000	0.6300	2.4165
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.4000	5.8800	5.9425
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	1.9000	0.0000	0.0000
<b>Total</b>			<b>27.19</b>		<b>115.56</b>	<b>127.92</b>		<b>121.53</b>	<b>249.45</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.1500 in	S <sub>right</sub> =	40.56 in <sup>3</sup>	x-bar =	6.1500 in	S <sub>right</sub> =	40.56 in <sup>3</sup>
I <sub>y</sub> =	249.45 in <sup>4</sup>	S <sub>left</sub> =	40.56 in <sup>3</sup>	I <sub>y</sub> =	249.45 in <sup>4</sup>	S <sub>left</sub> =	40.56 in <sup>3</sup>
C <sub>right</sub> =	6.1500 in	A =	27.1900 in <sup>2</sup>	C <sub>right</sub> =	6.1500 in	A =	27.1900 in <sup>2</sup>
C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.0289 in	C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.0289 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	520.71 k-ft	520.71 k-ft
V	278.75 k	278.75 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



Made By CTG  
Checked By DMP

Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W21x101	<b>Bottom Angles:</b>	
$A_1 = b_f =$	12.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.8000 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	18.0000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.5000 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	18.3750 in
$B_3 = t =$	0.5000 in	$Gap =$	0.3750 in

\*select from dropdown list

Coped Stringer S7-20 @ FB G2

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	9.8400	17.9750	176.8740	0.5248	8.2064	662.6788	663.2036
	Web	8.6000	8.9750	77.1850	212.0187	0.7936	5.4160	217.4346
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	9.5186	317.1115	317.1844
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	6.7686	274.8817	292.8817
3	Additional Plate	0.0000	0.3750	0.0000	0.0000	9.3936	0.0000	0.0000
<b>Total</b>		<b>27.94</b>		<b>272.93</b>	<b>230.62</b>		<b>1260.09</b>	<b>1490.70</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



Made By CTG  
Checked By DMP

Date 3/15/2012  
Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	9.7686 in	S <sub>top</sub> =	173.21 in <sup>3</sup>	y-bar =	9.7686 in	S <sub>top</sub> =	173.21 in <sup>3</sup>
I <sub>x</sub> =	1490.70 in <sup>4</sup>	S <sub>bott.</sub> =	152.60 in <sup>3</sup>	I <sub>x</sub> =	1490.70 in <sup>4</sup>	S <sub>bott.</sub> =	152.60 in <sup>3</sup>
C <sub>top</sub> =	8.6064 in	A =	27.9400 in <sup>2</sup>	C <sub>top</sub> =	8.6064 in	A =	27.9400 in <sup>2</sup>
C <sub>bottom</sub> =	9.7686 in	r <sub>x</sub> =	7.3044 in	C <sub>bottom</sub> =	9.7686 in	r <sub>x</sub> =	7.3044 in
J =	3.6075 in <sup>4</sup>	Z =	191.87 in <sup>3</sup>	Z =	191.87 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		9.8400	4.2500	41.8200	124.0578	1.9000	35.5224	159.5802
	Web		8.6000	4.2500	36.5500	0.1792	1.9000	31.0460	31.2252
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	4.4000	33.8800	35.6665
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	2.4000	17.2800	17.3425
2 (Right)	Horizontal Leg		1.7500	6.7500	11.8125	1.7865	0.6000	0.6300	2.4165
	Vertical Leg		3.0000	4.7500	14.2500	0.0625	1.4000	5.8800	5.9425
3	Additional Plate		0.0000	4.2500	0.0000	0.0000	1.9000	0.0000	0.0000
<b>Total</b>			<b>27.94</b>		<b>118.75</b>	<b>127.93</b>		<b>124.24</b>	<b>252.17</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.1500 in	S <sub>right</sub> =	41.00 in <sup>3</sup>	x-bar =	6.1500 in	S <sub>right</sub> =	41.00 in <sup>3</sup>
I <sub>y</sub> =	252.17 in <sup>4</sup>	S <sub>left</sub> =	41.00 in <sup>3</sup>	I <sub>y</sub> =	252.17 in <sup>4</sup>	S <sub>left</sub> =	41.00 in <sup>3</sup>
C <sub>right</sub> =	6.1500 in	A =	27.9400 in <sup>2</sup>	C <sub>right</sub> =	6.1500 in	A =	27.9400 in <sup>2</sup>
C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.0043 in	C <sub>left</sub> =	6.1500 in	r <sub>y</sub> =	3.0043 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	575.61 k-ft	575.61 k-ft
V	294.41 k	294.41 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





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Job No. P402110046  
Sheet No. \_\_\_\_\_

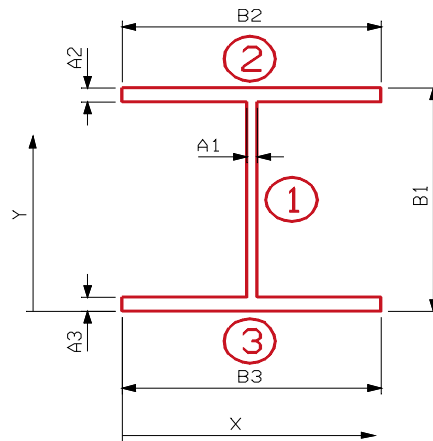
Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 18.5000$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.7500$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in

$d_o = N/A$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F2-20 @ FB G1**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		6.3750	9.2500	58.9688	153.5313	0.2636	0.4430	153.9743
2	Top Flange		6.5625	18.1250	118.9453	0.3076	8.6114	486.6486	486.9562
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	9.1386	501.0856	501.3668
<b>Total</b>			<b>18.94</b>		<b>180.16</b>	<b>154.12</b>		<b>988.18</b>	<b>1142.30</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
y-bar =	9.5136	in	$S_{top} =$	127.11	in <sup>3</sup>	y-bar =	9.5136	in	$S_{top} =$	127.11	in <sup>3</sup>
$I_x =$	1142.30	in <sup>4</sup>	$S_{bott.} =$	120.07	in <sup>3</sup>	$I_x =$	1142.30	in <sup>4</sup>	$S_{bott.} =$	120.07	in <sup>3</sup>
$C_{top} =$	8.9864	in	A =	18.9375	in <sup>2</sup>	$C_{top} =$	8.9864	in	A =	18.9375	in <sup>2</sup>
$C_{bottom} =$	9.5136	in	$r_x =$	7.7666	in	$C_{bottom} =$	9.5136	in	$r_x =$	7.7666	in
J =	2.6543	in <sup>4</sup>	Z =	138.38	in <sup>3</sup>	Z =	138.38	in <sup>3</sup>			



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		6.3750	4.3750	27.8906	0.0747	0.0000	0.0000	0.0747
2	Top Flange		6.5625	4.3750	28.7109	41.8701	0.0000	0.0000	41.8701
3	Bottom Flange		6.0000	4.3750	26.2500	32.0000	0.0000	0.0000	32.0000
<b>Total</b>			<b>18.94</b>		<b>82.85</b>	<b>73.94</b>		<b>0.00</b>	<b>73.94</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.3750	in	S <sub>right</sub> = 16.90 in <sup>3</sup>	x-bar =	4.3750	in	S <sub>right</sub> = 16.90 in <sup>3</sup>
I <sub>y</sub> =	73.94	in <sup>4</sup>	S <sub>left</sub> = 16.90 in <sup>3</sup>	I <sub>y</sub> =	73.94	in <sup>4</sup>	S <sub>left</sub> = 16.90 in <sup>3</sup>
C <sub>right</sub> =	4.3750	in	A = 18.9375 in <sup>2</sup>	C <sub>right</sub> =	4.3750	in	A = 18.9375 in <sup>2</sup>
C <sub>left</sub> =	4.3750	in	r <sub>y</sub> = 1.9760 in	C <sub>left</sub> =	4.3750	in	r <sub>y</sub> = 1.9760 in

Non-composite Capacities*		
	AB	AI
M	415.13 k-ft	415.13 k-ft
V	133.11 k	133.11 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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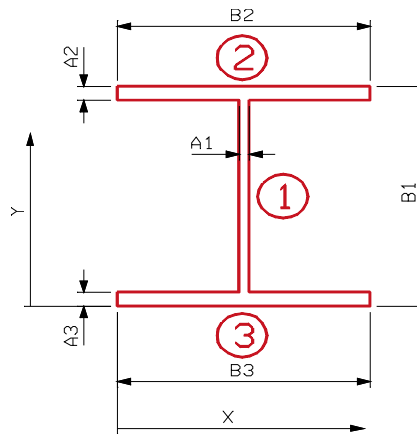
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 38.9688$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F2-20 Avg**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		14.0508	19.4844	273.7707	1643.8328	0.0000	0.0000	1643.8328
2	Top Flange		6.0000	38.5938	231.5625	0.2813	19.1094	2191.0093	2191.2905
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	19.1094	2191.0093	2191.2905
<b>Total</b>			<b>26.05</b>		<b>507.58</b>	<b>1644.40</b>		<b>4382.02</b>	<b>6026.41</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	19.4844	in	$S_{top} = 309.29$ in <sup>3</sup>	y-bar =	19.4844	in	$S_{top} = 309.29$ in <sup>3</sup>
$I_x =$	6026.41	in <sup>4</sup>	$S_{bottom} = 309.29$ in <sup>3</sup>	$I_x =$	6026.41	in <sup>4</sup>	$S_{bottom} = 309.29$ in <sup>3</sup>
$C_{top} =$	19.4844	in	A = 26.0508 in <sup>2</sup>	$C_{top} =$	19.4844	in	A = 26.0508 in <sup>2</sup>
$C_{bottom} =$	19.4844	in	$r_x = 15.2096$ in	$C_{bottom} =$	19.4844	in	$r_x = 15.2096$ in
J =	2.9086	in <sup>4</sup>	Z = 360.93 in <sup>3</sup>				Z = <b>360.93</b> in <sup>3</sup>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	14.0508	4.0000	56.2031	0.1647	0.0000	0.0000	0.1647
2	Top Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>		<b>26.05</b>		<b>104.20</b>	<b>64.16</b>		<b>0.00</b>	<b>64.16</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 16.04 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 16.04 in <sup>3</sup>
I <sub>y</sub> =	64.16	in <sup>4</sup>	S <sub>left</sub> = 16.04 in <sup>3</sup>	I <sub>y</sub> =	64.16	in <sup>4</sup>	S <sub>left</sub> = 16.04 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 26.0508 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 26.0508 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.5694 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.5694 in

Non-composite Capacities*		
	AB	AI
M	1082.79 k-ft	1082.79 k-ft
V	183.67 k	183.67 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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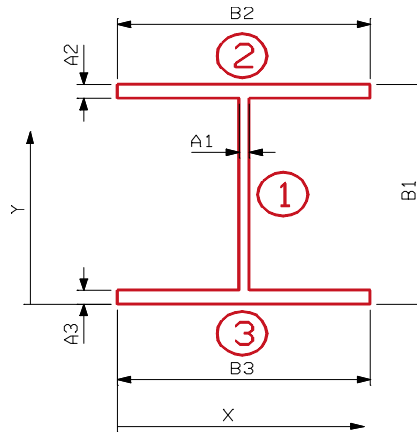
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 51.5000$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F1-21**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		18.7500	25.7500	482.8125	3906.2500	0.0000	0.0000	3906.2500
2	Top Flange		6.0000	51.1250	306.7500	0.2813	25.3750	3863.3438	3863.6250
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	25.3750	3863.3438	3863.6250
<b>Total</b>			<b>30.75</b>		<b>791.81</b>	<b>3906.81</b>		<b>7726.69</b>	<b>11633.50</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar = 25.7500 in	$S_{top} = 451.79$ in <sup>3</sup>			y-bar = 25.7500 in	$S_{top} = 451.79$ in <sup>3</sup>		
$I_x = 11633.50$ in <sup>4</sup>	$S_{bottom} = 451.79$ in <sup>3</sup>			$I_x = 11633.50$ in <sup>4</sup>	$S_{bottom} = 451.79$ in <sup>3</sup>		
$C_{top} = 25.7500$ in	$A = 30.7500$ in <sup>2</sup>			$C_{top} = 25.7500$ in	$A = 30.7500$ in <sup>2</sup>		
$C_{bottom} = 25.7500$ in	$r_x = 19.4506$ in			$C_{bottom} = 25.7500$ in	$r_x = 19.4506$ in		
$J = 3.1289$ in <sup>4</sup>	$Z = 538.88$ in <sup>3</sup>			$Z = 538.88$ in <sup>3</sup>			



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Date 3/16/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	18.7500	4.0000	75.0000	0.2197	0.0000	0.0000	0.2197
2	Top Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>		<b>30.75</b>		<b>123.00</b>	<b>64.22</b>		<b>0.00</b>	<b>64.22</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 16.05 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 16.05 in <sup>3</sup>
I <sub>y</sub> =	64.22	in <sup>4</sup>	S <sub>left</sub> = 16.05 in <sup>3</sup>	I <sub>y</sub> =	64.22	in <sup>4</sup>	S <sub>left</sub> = 16.05 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 30.7500 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 30.7500 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.4451 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.4451 in

Non-composite Capacities*		
	AB	AI
M	1355.36 k-ft	1355.36 k-ft
V	137.64 k	137.64 k

\*Noncompact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x86	<b>Bottom Angles:</b>
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.7700 in	$B_2 = L_h =$ 6.0000 in
$C_1 = d =$	15.7500 in	$C_2 = t =$ 0.7500 in
$D_1 = t_w =$	0.4800 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	$H =$ 16.3125 in
$B_3 = t =$	0.4800 in	$Gap =$ 0.5625 in

\*select from dropdown list

Coped Stringer S7-21 @ FB G3

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	8.5470	15.9275	136.1323	0.4223	9.0594	701.4712	701.8934
	Web	7.1904	8.0525	57.9007	134.4607	1.1844	10.0862	144.5469
2	Horizontal Legs	7.8750	0.3750	2.9531	0.3691	6.4931	332.0157	332.3848
	Vertical Legs	9.0000	3.0000	27.0000	27.0000	3.8681	134.6618	161.6618
3	Additional Plate	0.0000	0.5625	0.0000	0.0000	6.3056	0.0000	0.0000
<b>Total</b>		<b>32.61</b>		<b>223.99</b>	<b>162.25</b>		<b>1178.23</b>	<b>1340.49</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/15/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.8681 in	S <sub>top</sub> =	141.94 in <sup>3</sup>	y-bar =	6.8681 in	S <sub>top</sub> =	141.94 in <sup>3</sup>
I <sub>x</sub> =	1340.49 in <sup>4</sup>	S <sub>bottom</sub> =	195.17 in <sup>3</sup>	I <sub>x</sub> =	1340.49 in <sup>4</sup>	S <sub>bottom</sub> =	195.17 in <sup>3</sup>
C <sub>top</sub> =	9.4444 in	A =	32.6124 in <sup>2</sup>	C <sub>top</sub> =	9.4444 in	A =	32.6124 in <sup>2</sup>
C <sub>bottom</sub> =	6.8681 in	r <sub>x</sub> =	6.4112 in	C <sub>bottom</sub> =	6.8681 in	r <sub>x</sub> =	6.4112 in
J =	5.4055 in <sup>4</sup>	Z =	179.99 in <sup>3</sup>	Z =	179.99 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		8.5470	6.2400	53.3333	87.7563	0.0000	0.0000	87.7563
	Web		7.1904	6.2400	44.8681	0.1381	0.0000	0.0000	0.1381
2 (Left)	Horizontal Leg		3.9375	2.6250	10.3359	9.0439	3.6150	51.4561	60.5001
	Vertical Leg		4.5000	5.6250	25.3125	0.2109	0.6150	1.7020	1.9130
2 (Right)	Horizontal Leg		3.9375	9.8550	38.8041	9.0439	3.6150	51.4561	60.5001
	Vertical Leg		4.5000	6.8550	30.8475	0.2109	0.6150	1.7020	1.9130
3	Additional Plate		0.0000	6.2400	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>32.61</b>		<b>203.50</b>	<b>106.40</b>		<b>106.32</b>	<b>212.72</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.2400 in	S <sub>right</sub> =	34.09 in <sup>3</sup>	x-bar =	6.2400 in	S <sub>right</sub> =	34.09 in <sup>3</sup>
I <sub>y</sub> =	212.72 in <sup>4</sup>	S <sub>left</sub> =	34.09 in <sup>3</sup>	I <sub>y</sub> =	212.72 in <sup>4</sup>	S <sub>left</sub> =	34.09 in <sup>3</sup>
C <sub>right</sub> =	6.2400 in	A =	32.6124 in <sup>2</sup>	C <sub>right</sub> =	6.2400 in	A =	32.6124 in <sup>2</sup>
C <sub>left</sub> =	6.2400 in	r <sub>y</sub> =	2.5540 in	C <sub>left</sub> =	6.2400 in	r <sub>y</sub> =	2.5540 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	539.97 k-ft	539.97 k-ft
V	314.57 k	314.57 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





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Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W18x86	<b>Bottom Angles:</b>	
$A_1 = b_f =$	11.1000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7700 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	14.2500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.4800 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	14.7500 in
$B_3 = t =$	0.4800 in	$Gap =$	0.5000 in

\*select from dropdown list

Coped Stringer S7-21 @ FB G4

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	8.5470	14.3650	122.7777	0.4223	6.6767	381.0052	381.4275
	Web	6.4704	7.2400	46.8457	97.9782	0.4483	1.3007	99.2789
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	7.4383	193.6517	193.7246
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.6883	131.8838	149.8838
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	7.1883	0.0000	0.0000
<b>Total</b>		<b>24.52</b>		<b>188.50</b>	<b>116.47</b>		<b>707.84</b>	<b>824.31</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/15/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	7.6883 in	S <sub>top</sub> =	116.73 in <sup>3</sup>	y-bar =	7.6883 in	S <sub>top</sub> =	116.73 in <sup>3</sup>
I <sub>x</sub> =	824.31 in <sup>4</sup>	S <sub>bottom</sub> =	107.22 in <sup>3</sup>	I <sub>x</sub> =	824.31 in <sup>4</sup>	S <sub>bottom</sub> =	107.22 in <sup>3</sup>
C <sub>top</sub> =	7.0617 in	A =	24.5174 in <sup>2</sup>	C <sub>top</sub> =	7.0617 in	A =	24.5174 in <sup>2</sup>
C <sub>bottom</sub> =	7.6883 in	r <sub>x</sub> =	5.7984 in	C <sub>bottom</sub> =	7.6883 in	r <sub>x</sub> =	5.7984 in
J =	2.9778 in <sup>4</sup>	Z =	132.13 in <sup>3</sup>	Z =	132.13 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		8.5470	4.2400	36.2393	87.7563	1.3100	14.6675	102.4238
	Web		6.4704	4.2400	27.4345	0.1242	1.3100	11.1039	11.2281
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.8000	25.2700	27.0565
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.8000	9.7200	9.7825
2 (Right)	Horizontal Leg		1.7500	6.7300	11.7775	1.7865	1.1800	2.4367	4.2232
	Vertical Leg		3.0000	4.7300	14.1900	0.0625	0.8200	2.0172	2.0797
3	Additional Plate		0.0000	4.2400	0.0000	0.0000	1.3100	0.0000	0.0000
<b>Total</b>			<b>24.52</b>		<b>103.95</b>	<b>91.58</b>		<b>65.22</b>	<b>156.79</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.5500 in	S <sub>right</sub> =	28.25 in <sup>3</sup>	x-bar =	5.5500 in	S <sub>right</sub> =	28.25 in <sup>3</sup>
I <sub>y</sub> =	156.79 in <sup>4</sup>	S <sub>left</sub> =	28.25 in <sup>3</sup>	I <sub>y</sub> =	156.79 in <sup>4</sup>	S <sub>left</sub> =	28.25 in <sup>3</sup>
C <sub>right</sub> =	5.5500 in	A =	24.5174 in <sup>2</sup>	C <sub>right</sub> =	5.5500 in	A =	24.5174 in <sup>2</sup>
C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.5289 in	C <sub>left</sub> =	5.5500 in	r <sub>y</sub> =	2.5289 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	396.39 k-ft	396.39 k-ft
V	249.94 k	249.94 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/16/2012  
Date 3/26/2012

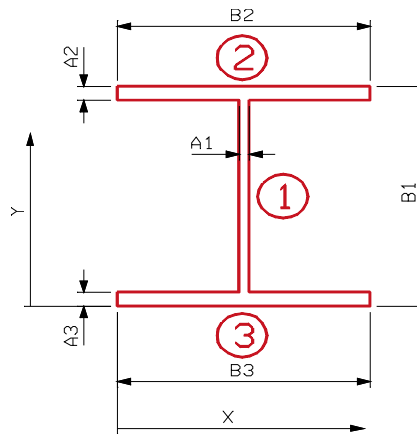
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 38.0313$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



Fascia Stringer F2-21 Avg

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		13.6992	19.0156	260.4992	1523.5041	0.0000	0.0000	1523.5041
2	Top Flange		6.0000	37.6563	225.9375	0.2813	18.6406	2084.8374	2085.1187
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	18.6406	2084.8374	2085.1187
<b>Total</b>			<b>25.70</b>		<b>488.69</b>	<b>1524.07</b>		<b>4169.67</b>	<b>5693.74</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	19.0156	in	$S_{top} = 299.42$	in <sup>3</sup>	y-bar =	19.0156	in	$S_{top} = 299.42$	in <sup>3</sup>		
$I_x =$	5693.74	n <sup>4</sup>	$S_{bott.} = 299.42$	in <sup>3</sup>	$I_x =$	5693.74	n <sup>4</sup>	$S_{bott.} = 299.42$	in <sup>3</sup>		
$C_{top} =$	19.0156	in	A =	25.6992	in <sup>2</sup>	$C_{top} =$	19.0156	in	A =	25.6992	in <sup>2</sup>
$C_{bottom} =$	19.0156	in	$r_x =$	14.8847	in	$C_{bottom} =$	19.0156	in	$r_x =$	14.8847	in
J =	2.8922	in <sup>4</sup>	Z =	348.80	in <sup>3</sup>	Z =	348.80	in <sup>3</sup>			



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Date 3/16/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	13.6992	4.0000	54.7969	0.1605	0.0000	0.0000	0.1605
2	Top Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>		<b>25.70</b>		<b>102.80</b>	<b>64.16</b>		<b>0.00</b>	<b>64.16</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 16.04 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 16.04 in <sup>3</sup>
I <sub>y</sub> =	64.16	in <sup>4</sup>	S <sub>left</sub> = 16.04 in <sup>3</sup>	I <sub>y</sub> =	64.16	in <sup>4</sup>	S <sub>left</sub> = 16.04 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 25.6992 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 25.6992 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.5801 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.5801 in

Non-composite Capacities*		
	AB	AI
M	1046.40 k-ft	1046.40 k-ft
V	188.38 k	188.38 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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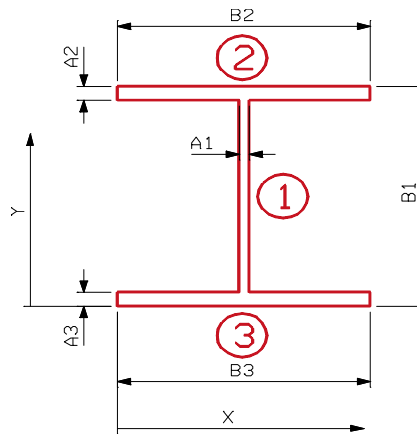
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 50.4688$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



Fascia Stringer F1-22 Avg

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	18.3633	25.2344	463.3859	3669.5016	0.0000	0.0000	3669.5016
2	Top Flange	6.0000	50.0938	300.5625	0.2813	24.8594	3707.9312	3708.2124
3	Bottom Flange	6.0000	0.3750	2.2500	0.2813	24.8594	3707.9312	3708.2124
<b>Total</b>		<b>30.36</b>		<b>766.20</b>	<b>3670.06</b>		<b>7415.86</b>	<b>11085.93</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	25.2344 in	$S_{top} =$	439.32 in <sup>3</sup>	y-bar =	25.2344 in	$S_{top} =$	439.32 in <sup>3</sup>
$I_x =$	11085.93 in <sup>4</sup>	$S_{bott.} =$	439.32 in <sup>3</sup>	$I_x =$	11085.93 in <sup>4</sup>	$S_{bott.} =$	439.32 in <sup>3</sup>
$C_{top} =$	25.2344 in	A =	30.3633 in <sup>2</sup>	$C_{top} =$	25.2344 in	A =	30.3633 in <sup>2</sup>
$C_{bottom} =$	25.2344 in	$r_x =$	19.1078 in	$C_{bottom} =$	25.2344 in	$r_x =$	19.1078 in
J =	3.1108 in <sup>4</sup>	Z =	523.12 in <sup>3</sup>			Z =	523.12 in <sup>3</sup>



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Date 3/16/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	18.3633	4.0000	73.4531	0.2152	0.0000	0.0000	0.2152
2	Top Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>		<b>30.36</b>		<b>121.45</b>	<b>64.22</b>		<b>0.00</b>	<b>64.22</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 16.05 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 16.05 in <sup>3</sup>
I <sub>y</sub> =	64.22	in <sup>4</sup>	S <sub>left</sub> = 16.05 in <sup>3</sup>	I <sub>y</sub> =	64.22	in <sup>4</sup>	S <sub>left</sub> = 16.05 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 30.3633 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 30.3633 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.4543 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.4543 in

Non-composite Capacities*		
	AB	AI
M	1317.96 k-ft	1317.96 k-ft
V	140.54 k	140.54 k

\*Noncompact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

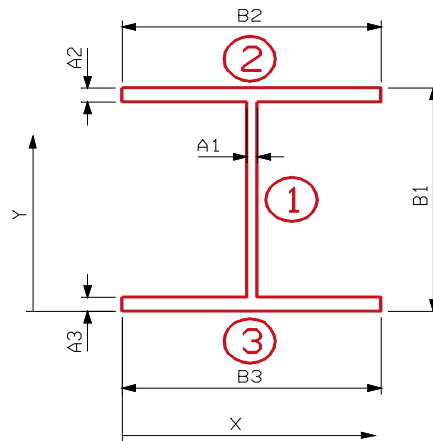
Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 24.0625$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.7500$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in

$d_o = \text{N/A}$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F1-22 @ FB G6**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		8.4609	12.0313	101.7957	358.9316	0.3119	0.8230	359.7545
2	Top Flange		6.5625	23.6875	155.4492	0.3076	11.3444	844.5602	844.8678
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	11.9681	859.4158	859.6970
<b>Total</b>			<b>21.02</b>		<b>259.49</b>	<b>359.52</b>		<b>1704.80</b>	<b>2064.32</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	12.3431	in	$S_{top} = 176.15$	$in^3$	y-bar =	12.3431	in	$S_{top} = 176.15$	$in^3$		
$I_x =$	2064.32	$in^4$	$S_{bott.} = 167.24$	$in^3$	$I_x =$	2064.32	$in^4$	$S_{bott.} = 167.24$	$in^3$		
$C_{top} =$	11.7194	in	A =	21.0234	$in^2$	$C_{top} =$	11.7194	in	A =	21.0234	$in^2$
$C_{bottom} =$	12.3431	in	$r_x =$	9.9092	in	$C_{bottom} =$	12.3431	in	$r_x =$	9.9092	in
J =	2.7521	$in^4$	Z =	193.95	$in^3$	Z =	193.95	$in^3$			



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Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		8.4609	4.3750	37.0166	0.0992	0.0000	0.0000	0.0992
2	Top Flange		6.5625	4.3750	28.7109	41.8701	0.0000	0.0000	41.8701
3	Bottom Flange		6.0000	4.3750	26.2500	32.0000	0.0000	0.0000	32.0000
<b>Total</b>			<b>21.02</b>		<b>91.98</b>	<b>73.97</b>		<b>0.00</b>	<b>73.97</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.3750	in	S <sub>right</sub> = 16.91 in <sup>3</sup>	x-bar =	4.3750	in	S <sub>right</sub> = 16.91 in <sup>3</sup>
I <sub>y</sub> =	73.97	in <sup>4</sup>	S <sub>left</sub> = 16.91 in <sup>3</sup>	I <sub>y</sub> =	73.97	in <sup>4</sup>	S <sub>left</sub> = 16.91 in <sup>3</sup>
C <sub>right</sub> =	4.3750	in	A = 21.0234 in <sup>2</sup>	C <sub>right</sub> =	4.3750	in	A = 21.0234 in <sup>2</sup>
C <sub>left</sub> =	4.3750	in	r <sub>y</sub> = 1.8757 in	C <sub>left</sub> =	4.3750	in	r <sub>y</sub> = 1.8757 in

Non-composite Capacities*		
	AB	AI
M	581.84 k-ft	581.84 k-ft
V	176.66 k	176.66 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear





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Date 3/15/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W16x77	<b>Bottom Angles:</b>
$A_1 = b_f =$	10.3000 in	$A_2 = L_v =$ 6.0000 in
$B_1 = t_f =$	0.7600 in	$B_2 = L_h =$ 4.0000 in
$C_1 = d =$	14.5000 in	$C_2 = t =$ 0.5000 in
$D_1 = t_w =$	0.4550 in	



<b>Additional Plate:</b>		<b>Miscellaneous:</b>
$A_3 = d =$	0.0000 in	$H =$ 15.0000 in
$B_3 = t =$	0.4550 in	$Gap =$ 0.5000 in

\*select from dropdown list

Coped Stringer S3-22 @ FB G6

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	7.8280	14.6200	114.4454	0.3768	7.0120	384.8834	385.2602
	Web	6.2517	7.3700	46.0750	98.3536	0.2380	0.3543	98.7079
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	7.3580	189.4928	189.5657
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.6080	127.4044	145.4044
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	7.1080	0.0000	0.0000
<b>Total</b>		<b>23.58</b>		<b>179.40</b>	<b>116.80</b>		<b>702.13</b>	<b>818.94</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/15/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	7.6080 in	S <sub>top</sub> =	110.79 in <sup>3</sup>	y-bar =	7.6080 in	S <sub>top</sub> =	110.79 in <sup>3</sup>
I <sub>x</sub> =	818.94 in <sup>4</sup>	S <sub>bott.</sub> =	107.64 in <sup>3</sup>	I <sub>x</sub> =	818.94 in <sup>4</sup>	S <sub>bott.</sub> =	107.64 in <sup>3</sup>
C <sub>top</sub> =	7.3920 in	A =	23.5797 in <sup>2</sup>	C <sub>top</sub> =	7.3920 in	A =	23.5797 in <sup>2</sup>
C <sub>bottom</sub> =	7.6080 in	r <sub>x</sub> =	5.8933 in	C <sub>bottom</sub> =	7.6080 in	r <sub>x</sub> =	5.8933 in
J =	2.7302 in <sup>4</sup>	Z =	127.90 in <sup>3</sup>			Z =	127.90 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		7.8280	4.2275	33.0929	69.2060	0.9225	6.6617	75.8677
	Web		6.2517	4.2275	26.4291	0.1079	0.9225	5.3202	5.4281
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.4000	20.2300	22.0165
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.4000	5.8800	5.9425
2 (Right)	Horizontal Leg		1.7500	6.7050	11.7338	1.7865	1.5550	4.2315	6.0180
	Vertical Leg		3.0000	4.7050	14.1150	0.0625	0.4450	0.5941	0.6566
3	Additional Plate		0.0000	4.2275	0.0000	0.0000	0.9225	0.0000	0.0000
<b>Total</b>			<b>23.58</b>		<b>99.68</b>	<b>73.01</b>		<b>42.92</b>	<b>115.93</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.1500 in	S <sub>right</sub> =	22.51 in <sup>3</sup>	x-bar =	5.1500 in	S <sub>right</sub> =	22.51 in <sup>3</sup>
I <sub>y</sub> =	115.93 in <sup>4</sup>	S <sub>left</sub> =	22.51 in <sup>3</sup>	I <sub>y</sub> =	115.93 in <sup>4</sup>	S <sub>left</sub> =	22.51 in <sup>3</sup>
C <sub>right</sub> =	5.1500 in	A =	23.5797 in <sup>2</sup>	C <sub>right</sub> =	5.1500 in	A =	23.5797 in <sup>2</sup>
C <sub>left</sub> =	5.1500 in	r <sub>y</sub> =	2.2173 in	C <sub>left</sub> =	5.1500 in	r <sub>y</sub> =	2.2173 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	383.70 k-ft	383.70 k-ft
V	245.38 k	245.38 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/15/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<u>Partial W-Section*</u>	W16x77	<u>Bottom Angles:</u>	
$A_1 = b_f =$	10.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7600 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	12.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.4550 in		



<u>Additional Plate:</u>		<u>Miscellaneous:</u>	
$A_3 = d =$	0.0000 in	$H =$	13.1250 in
$B_3 = t =$	0.4550 in	$GAP =$	0.6250 in

\*select from dropdown list

Coped Stringer S4-22 @ FB G6

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	7.8280	12.7450	99.7679	0.3768	5.9810	280.0287	280.4055
	Web	5.3417	6.4950	34.6943	61.3528	0.2690	0.3864	61.7393
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.5140	148.5114	148.5843
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.7640	85.0049	103.0049
3	Additional Plate	0.0000	0.6250	0.0000	0.0000	6.1390	0.0000	0.0000
<b>Total</b>		<b>22.67</b>		<b>153.34</b>	<b>79.80</b>		<b>513.93</b>	<b>593.73</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/15/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.7640 in	S <sub>top</sub> =	93.34 in <sup>3</sup>	y-bar =	6.7640 in	S <sub>top</sub> =	93.34 in <sup>3</sup>
I <sub>x</sub> =	593.73 in <sup>4</sup>	S <sub>bott.</sub> =	87.78 in <sup>3</sup>	I <sub>x</sub> =	593.73 in <sup>4</sup>	S <sub>bott.</sub> =	87.78 in <sup>3</sup>
C <sub>top</sub> =	6.3610 in	A =	22.6697 in <sup>2</sup>	C <sub>top</sub> =	6.3610 in	A =	22.6697 in <sup>2</sup>
C <sub>bottom</sub> =	6.7640 in	r <sub>x</sub> =	5.1177 in	C <sub>bottom</sub> =	6.7640 in	r <sub>x</sub> =	5.1177 in
J =	2.6674 in <sup>4</sup>	Z =	106.46 in <sup>3</sup>			Z =	106.46 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		7.8280	4.2275	33.0929	69.2060	0.9225	6.6617	75.8677
	Web		5.3417	4.2275	22.5820	0.0922	0.9225	4.5458	4.6380
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.4000	20.2300	22.0165
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.4000	5.8800	5.9425
2 (Right)	Horizontal Leg		1.7500	6.7050	11.7338	1.7865	1.5550	4.2315	6.0180
	Vertical Leg		3.0000	4.7050	14.1150	0.0625	0.4450	0.5941	0.6566
3	Additional Plate		0.0000	4.2275	0.0000	0.0000	0.9225	0.0000	0.0000
<b>Total</b>			<b>22.67</b>		<b>95.84</b>	<b>73.00</b>		<b>42.14</b>	<b>115.14</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.1500 in	S <sub>right</sub> =	22.36 in <sup>3</sup>	x-bar =	5.1500 in	S <sub>right</sub> =	22.36 in <sup>3</sup>
I <sub>y</sub> =	115.14 in <sup>4</sup>	S <sub>left</sub> =	22.36 in <sup>3</sup>	I <sub>y</sub> =	115.14 in <sup>4</sup>	S <sub>left</sub> =	22.36 in <sup>3</sup>
C <sub>right</sub> =	5.1500 in	A =	22.6697 in <sup>2</sup>	C <sub>right</sub> =	5.1500 in	A =	22.6697 in <sup>2</sup>
C <sub>left</sub> =	5.1500 in	r <sub>y</sub> =	2.2537 in	C <sub>left</sub> =	5.1500 in	r <sub>y</sub> =	2.2537 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	319.38 k-ft	319.38 k-ft
V	226.37 k	226.37 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



Made By CTG  
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Date 3/15/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W16x77	<b>Bottom Angles:</b>	
$A_1 = b_f =$	10.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7600 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	12.0000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.4550 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	12.5000 in
$B_3 = t =$	0.4550 in	$GAP =$	0.5000 in

\*select from dropdown list

Coped Stringer S5-22 @ FB G6

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	7.8280	12.1200	94.8754	0.3768	5.6568	250.4879	250.8647
	Web	5.1142	6.1200	31.2989	53.8430	0.3432	0.6025	54.4455
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.2132	135.1151	135.1880
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.4632	71.9641	89.9641
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.9632	0.0000	0.0000
<b>Total</b>		<b>22.44</b>		<b>145.05</b>	<b>72.29</b>		<b>458.17</b>	<b>530.46</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/15/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties					As-Inspected Section Properties						
y-bar =	6.4632	in	S <sub>top</sub> =	87.87	in <sup>3</sup>	y-bar =	6.4632	in	S <sub>top</sub> =	87.87	in <sup>3</sup>
I <sub>x</sub> =	530.46	in <sup>4</sup>	S <sub>bott.</sub> =	82.07	in <sup>3</sup>	I <sub>x</sub> =	530.46	in <sup>4</sup>	S <sub>bott.</sub> =	82.07	in <sup>3</sup>
C <sub>top</sub> =	6.0368	in	A =	22.4422	in <sup>2</sup>	C <sub>top</sub> =	6.0368	in	A =	22.4422	in <sup>2</sup>
C <sub>bottom</sub> =	6.4632	in	r <sub>x</sub> =	4.8618	in	C <sub>bottom</sub> =	6.4632	in	r <sub>x</sub> =	4.8618	in
J =	2.6517	in <sup>4</sup>	Z =	99.99	in <sup>3</sup>	Z =	99.99	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		7.8280	4.2275	33.0929	69.2060	0.9225	6.6617	75.8677
	Web		5.1142	4.2275	21.6203	0.0882	0.9225	4.3522	4.4404
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.4000	20.2300	22.0165
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.4000	5.8800	5.9425
2 (Right)	Horizontal Leg		1.7500	6.7050	11.7338	1.7865	1.5550	4.2315	6.0180
	Vertical Leg		3.0000	4.7050	14.1150	0.0625	0.4450	0.5941	0.6566
3	Additional Plate		0.0000	4.2275	0.0000	0.0000	0.9225	0.0000	0.0000
<b>Total</b>			<b>22.44</b>		<b>94.87</b>	<b>72.99</b>		<b>41.95</b>	<b>114.94</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	5.1500	in	S <sub>right</sub> =	22.32	in <sup>3</sup>	x-bar =	5.1500	in	S <sub>right</sub> =	22.32	in <sup>3</sup>
I <sub>y</sub> =	114.94	in <sup>4</sup>	S <sub>left</sub> =	22.32	in <sup>3</sup>	I <sub>y</sub> =	114.94	in <sup>4</sup>	S <sub>left</sub> =	22.32	in <sup>3</sup>
C <sub>right</sub> =	5.1500	in	A =	22.4422	in <sup>2</sup>	C <sub>right</sub> =	5.1500	in	A =	22.4422	in <sup>2</sup>
C <sub>left</sub> =	5.1500	in	r <sub>y</sub> =	2.2631	in	C <sub>left</sub> =	5.1500	in	r <sub>y</sub> =	2.2631	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	299.97 k-ft	299.97 k-ft
V	221.62 k	221.62 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/15/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<u>Partial W-Section*</u>	W16x77	<u>Bottom Angles:</u>	
$A_1 = b_f =$	10.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7600 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	10.7500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.4550 in		



<u>Additional Plate:</u>		<u>Miscellaneous:</u>	
$A_3 = d =$	0.0000 in	$H =$	11.1875 in
$B_3 = t =$	0.4550 in	$Gap =$	0.4375 in

\*select from dropdown list

Coped Stringer S6-22 @ FB G6

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	7.8280	10.8075	84.6011	0.3768	4.9479	191.6443	192.0211
	Web	4.5455	5.4325	24.6932	37.8030	0.4271	0.8291	38.6321
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.6096	110.1359	110.2088
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	2.8596	49.0632	67.0632
3	Additional Plate	0.0000	0.4375	0.0000	0.0000	5.4221	0.0000	0.0000
<b>Total</b>		<b>21.87</b>		<b>128.17</b>	<b>56.25</b>		<b>351.67</b>	<b>407.93</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/15/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	5.8596	in	S <sub>top</sub> =	76.56	in <sup>3</sup>	y-bar =	5.8596	in	S <sub>top</sub> =	76.56	in <sup>3</sup>
I <sub>x</sub> =	407.93	in <sup>4</sup>	S <sub>bott.</sub> =	69.62	in <sup>3</sup>	I <sub>x</sub> =	407.93	in <sup>4</sup>	S <sub>bott.</sub> =	69.62	in <sup>3</sup>
C <sub>top</sub> =	5.3279	in	A =	21.8735	in <sup>2</sup>	C <sub>top</sub> =	5.3279	in	A =	21.8735	in <sup>2</sup>
C <sub>bottom</sub> =	5.8596	in	r <sub>x</sub> =	4.3185	in	C <sub>bottom</sub> =	5.8596	in	r <sub>x</sub> =	4.3185	in
J =	2.6125	in <sup>4</sup>	Z =	86.43	in <sup>3</sup>	Z =	86.43	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	7.8280	4.2275	33.0929	69.2060	0.9225	6.6617	75.8677
	Web	4.5455	4.2275	19.2159	0.0784	0.9225	3.8682	3.9466
2 (Left)	Horizontal Leg	1.7500	1.7500	3.0625	1.7865	3.4000	20.2300	22.0165
	Vertical Leg	3.0000	3.7500	11.2500	0.0625	1.4000	5.8800	5.9425
2 (Right)	Horizontal Leg	1.7500	6.7050	11.7338	1.7865	1.5550	4.2315	6.0180
	Vertical Leg	3.0000	4.7050	14.1150	0.0625	0.4450	0.5941	0.6566
3	Additional Plate	0.0000	4.2275	0.0000	0.0000	0.9225	0.0000	0.0000
<b>Total</b>		<b>21.87</b>		<b>92.47</b>	<b>72.98</b>		<b>41.47</b>	<b>114.45</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.1500	in	S <sub>right</sub> =	22.22	in <sup>3</sup>	x-bar =	5.1500	in	S <sub>right</sub> =	22.22	in <sup>3</sup>
I <sub>y</sub> =	114.45	in <sup>4</sup>	S <sub>left</sub> =	22.22	in <sup>3</sup>	I <sub>y</sub> =	114.45	in <sup>4</sup>	S <sub>left</sub> =	22.22	in <sup>3</sup>
C <sub>right</sub> =	5.1500	in	A =	21.8735	in <sup>2</sup>	C <sub>right</sub> =	5.1500	in	A =	21.8735	in <sup>2</sup>
C <sub>left</sub> =	5.1500	in	r <sub>y</sub> =	2.2874	in	C <sub>left</sub> =	5.1500	in	r <sub>y</sub> =	2.2874	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	259.29 k-ft	259.29 k-ft
V	209.75 k	209.75 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





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Date 3/15/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W16x77	<b>Bottom Angles:</b>	
$A_1 = b_f =$	10.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7600 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	14.2500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.4550 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	14.7500 in
$B_3 = t =$	0.4550 in	$Gap =$	0.5000 in

\*select from dropdown list

Coped Stringer S7-22 @ FB G4

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	7.8280	14.3700	112.4884	0.3768	6.8769	370.1994	370.5762
	Web	6.1380	7.2450	44.4694	93.0821	0.2481	0.3778	93.4599
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	7.2431	183.6190	183.6919
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.4931	121.1279	139.1279
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.9931	0.0000	0.0000
<b>Total</b>		<b>23.47</b>		<b>175.83</b>	<b>111.53</b>		<b>675.32</b>	<b>786.86</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/15/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	7.4931 in	S <sub>top</sub> =	108.43 in <sup>3</sup>	y-bar =	7.4931 in	S <sub>top</sub> =	108.43 in <sup>3</sup>
I <sub>x</sub> =	786.86 in <sup>4</sup>	S <sub>bott.</sub> =	105.01 in <sup>3</sup>	I <sub>x</sub> =	786.86 in <sup>4</sup>	S <sub>bott.</sub> =	105.01 in <sup>3</sup>
C <sub>top</sub> =	7.2569 in	A =	23.4660 in <sup>2</sup>	C <sub>top</sub> =	7.2569 in	A =	23.4660 in <sup>2</sup>
C <sub>bottom</sub> =	7.4931 in	r <sub>x</sub> =	5.7907 in	C <sub>bottom</sub> =	7.4931 in	r <sub>x</sub> =	5.7907 in
J =	2.7224 in <sup>4</sup>	Z =	125.00 in <sup>3</sup>	Z =	125.00 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		7.8280	4.2275	33.0929	69.2060	0.9225	6.6617	75.8677
	Web		6.1380	4.2275	25.9482	0.1059	0.9225	5.2234	5.3293
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.4000	20.2300	22.0165
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.4000	5.8800	5.9425
2 (Right)	Horizontal Leg		1.7500	6.7050	11.7338	1.7865	1.5550	4.2315	6.0180
	Vertical Leg		3.0000	4.7050	14.1150	0.0625	0.4450	0.5941	0.6566
3	Additional Plate		0.0000	4.2275	0.0000	0.0000	0.9225	0.0000	0.0000
<b>Total</b>			<b>23.47</b>		<b>99.20</b>	<b>73.01</b>		<b>42.82</b>	<b>115.83</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.1500 in	S <sub>right</sub> =	22.49 in <sup>3</sup>	x-bar =	5.1500 in	S <sub>right</sub> =	22.49 in <sup>3</sup>
I <sub>y</sub> =	115.83 in <sup>4</sup>	S <sub>left</sub> =	22.49 in <sup>3</sup>	I <sub>y</sub> =	115.83 in <sup>4</sup>	S <sub>left</sub> =	22.49 in <sup>3</sup>
C <sub>right</sub> =	5.1500 in	A =	23.4660 in <sup>2</sup>	C <sub>right</sub> =	5.1500 in	A =	23.4660 in <sup>2</sup>
C <sub>left</sub> =	5.1500 in	r <sub>y</sub> =	2.2217 in	C <sub>left</sub> =	5.1500 in	r <sub>y</sub> =	2.2217 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	375.00 k-ft	375.00 k-ft
V	243.00 k	243.00 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/15/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W16x77	<b>Bottom Angles:</b>	
$A_1 = b_f =$	10.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7600 in	$B_2 = L_h =$	6.0000 in
$C_1 = d =$	13.2500 in	$C_2 = t =$	0.7500 in
$D_1 = t_w =$	0.4550 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	13.6250 in
$B_3 = t =$	0.4550 in	$GAP =$	0.3750 in

\*select from dropdown list

Coped Stringer S7-22 @ FB G5

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	7.8280	13.2450	103.6819	0.3768	7.6090	453.2133	453.5900
	Web	5.6830	6.6200	37.6211	73.8784	0.9840	5.5022	79.3806
2	Horizontal Legs	7.8750	0.3750	2.9531	0.3691	5.2610	217.9677	218.3368
	Vertical Legs	9.0000	3.0000	27.0000	27.0000	2.6360	62.5379	89.5379
3	Additional Plate	0.0000	0.3750	0.0000	0.0000	5.2610	0.0000	0.0000
<b>Total</b>		<b>30.39</b>		<b>171.26</b>	<b>101.62</b>		<b>739.22</b>	<b>840.85</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/15/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	5.6360 in	S <sub>top</sub> =	105.25 in <sup>3</sup>	y-bar =	5.6360 in	S <sub>top</sub> =	105.25 in <sup>3</sup>
I <sub>x</sub> =	840.85 in <sup>4</sup>	S <sub>bottom</sub> =	149.19 in <sup>3</sup>	I <sub>x</sub> =	840.85 in <sup>4</sup>	S <sub>bottom</sub> =	149.19 in <sup>3</sup>
C <sub>top</sub> =	7.9890 in	A =	30.3860 in <sup>2</sup>	C <sub>top</sub> =	7.9890 in	A =	30.3860 in <sup>2</sup>
C <sub>bottom</sub> =	5.6360 in	r <sub>x</sub> =	5.2604 in	C <sub>bottom</sub> =	5.6360 in	r <sub>x</sub> =	5.2604 in
J =	5.0634 in <sup>4</sup>	Z =	136.73 in <sup>3</sup>	Z =	136.73 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		7.8280	6.2275	48.7489	69.2060	0.0000	0.0000	69.2060
	Web		5.6830	6.2275	35.3906	0.0980	0.0000	0.0000	0.0980
2 (Left)	Horizontal Leg		3.9375	2.6250	10.3359	9.0439	3.6025	51.1009	60.1448
	Vertical Leg		4.5000	5.6250	25.3125	0.2109	0.6025	1.6335	1.8445
2 (Right)	Horizontal Leg		3.9375	9.8300	38.7056	9.0439	3.6025	51.1009	60.1448
	Vertical Leg		4.5000	6.8300	30.7350	0.2109	0.6025	1.6335	1.8445
3	Additional Plate		0.0000	6.2275	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>30.39</b>		<b>189.23</b>	<b>87.81</b>		<b>105.47</b>	<b>193.28</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.2275 in	S <sub>right</sub> =	31.04 in <sup>3</sup>	x-bar =	6.2275 in	S <sub>right</sub> =	31.04 in <sup>3</sup>
I <sub>y</sub> =	193.28 in <sup>4</sup>	S <sub>left</sub> =	31.04 in <sup>3</sup>	I <sub>y</sub> =	193.28 in <sup>4</sup>	S <sub>left</sub> =	31.04 in <sup>3</sup>
C <sub>right</sub> =	6.2275 in	A =	30.3860 in <sup>2</sup>	C <sub>right</sub> =	6.2275 in	A =	30.3860 in <sup>2</sup>
C <sub>left</sub> =	6.2275 in	r <sub>y</sub> =	2.5221 in	C <sub>left</sub> =	6.2275 in	r <sub>y</sub> =	2.5221 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	410.19 k-ft	410.19 k-ft
V	283.09 k	283.09 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



Made By CTG  
Checked By DMP

Date 3/15/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section*</b>	W16x77	<b>Bottom Angles:</b>	
$A_1 = b_f =$	10.3000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.7600 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	7.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.4550 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	7.8125 in
$B_3 = t =$	0.4550 in	$GAP =$	0.3125 in

\*select from dropdown list

Coped Stringer S7-22 @ FB G6

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	7.8280	7.4325	58.1816	0.3768	3.1005	75.2516	75.6284
	Web	3.0667	3.6825	11.2931	11.6094	0.6495	1.2937	12.9031
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	4.0820	58.3194	58.3923
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	1.3320	10.6453	28.6453
3	Additional Plate	0.0000	0.3125	0.0000	0.0000	4.0195	0.0000	0.0000
<b>Total</b>		<b>20.39</b>		<b>88.35</b>	<b>30.06</b>		<b>145.51</b>	<b>175.57</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	4.3320 in	S <sub>top</sub> =	50.44 in <sup>3</sup>	y-bar =	4.3320 in	S <sub>top</sub> =	50.44 in <sup>3</sup>
I <sub>x</sub> =	175.57 in <sup>4</sup>	S <sub>bottom</sub> =	40.53 in <sup>3</sup>	I <sub>x</sub> =	175.57 in <sup>4</sup>	S <sub>bottom</sub> =	40.53 in <sup>3</sup>
C <sub>top</sub> =	3.4805 in	A =	20.3947 in <sup>2</sup>	C <sub>top</sub> =	3.4805 in	A =	20.3947 in <sup>2</sup>
C <sub>bottom</sub> =	4.3320 in	r <sub>x</sub> =	2.9340 in	C <sub>bottom</sub> =	4.3320 in	r <sub>x</sub> =	2.9340 in
J =	2.5104 in <sup>4</sup>	Z =	54.49 in <sup>3</sup>	Z =	54.49 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	7.8280	4.2275	33.0929	69.2060	0.9225	6.6617	75.8677
	Web	3.0667	4.2275	12.9645	0.0529	0.9225	2.6098	2.6627
2 (Left)	Horizontal Leg	1.7500	1.7500	3.0625	1.7865	3.4000	20.2300	22.0165
	Vertical Leg	3.0000	3.7500	11.2500	0.0625	1.4000	5.8800	5.9425
2 (Right)	Horizontal Leg	1.7500	6.7050	11.7338	1.7865	1.5550	4.2315	6.0180
	Vertical Leg	3.0000	4.7050	14.1150	0.0625	0.4450	0.5941	0.6566
3	Additional Plate	0.0000	4.2275	0.0000	0.0000	0.9225	0.0000	0.0000
<b>Total</b>		<b>20.39</b>		<b>86.22</b>	<b>72.96</b>		<b>40.21</b>	<b>113.16</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.1500 in	S <sub>right</sub> =	21.97 in <sup>3</sup>	x-bar =	5.1500 in	S <sub>right</sub> =	21.97 in <sup>3</sup>
I <sub>y</sub> =	113.16 in <sup>4</sup>	S <sub>left</sub> =	21.97 in <sup>3</sup>	I <sub>y</sub> =	113.16 in <sup>4</sup>	S <sub>left</sub> =	21.97 in <sup>3</sup>
C <sub>right</sub> =	5.1500 in	A =	20.3947 in <sup>2</sup>	C <sub>right</sub> =	5.1500 in	A =	20.3947 in <sup>2</sup>
C <sub>left</sub> =	5.1500 in	r <sub>y</sub> =	2.3556 in	C <sub>left</sub> =	5.1500 in	r <sub>y</sub> =	2.3556 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	163.47 k-ft	163.47 k-ft
V	178.87 k	178.87 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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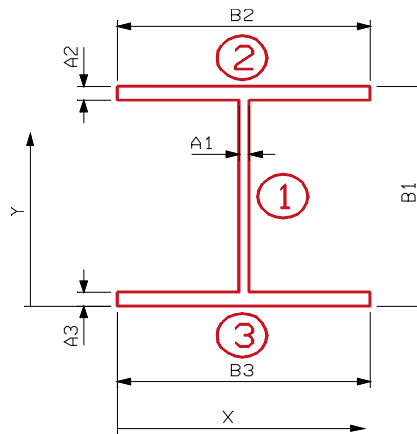
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 32.5313$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



Fascia Stringer F2-22 Avg

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		11.6367	16.2656	189.2785	933.7870	0.0000	0.0000	933.7870
2	Top Flange		6.0000	32.1563	192.9375	0.2813	15.8906	1515.0718	1515.3530
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	15.8906	1515.0718	1515.3530
<b>Total</b>			<b>23.64</b>		<b>384.47</b>	<b>934.35</b>		<b>3030.14</b>	<b>3964.49</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	16.2656	in	$S_{top} = 243.73$	in <sup>3</sup>	y-bar =	16.2656	in	$S_{top} = 243.73$	in <sup>3</sup>		
$I_x =$	3964.49	n <sup>4</sup>	$S_{bott.} = 243.73$	in <sup>3</sup>	$I_x =$	3964.49	n <sup>4</sup>	$S_{bott.} = 243.73$	in <sup>3</sup>		
$C_{top} =$	16.2656	in	A =	23.6367	in <sup>2</sup>	$C_{top} =$	16.2656	in	A =	23.6367	in <sup>2</sup>
$C_{bottom} =$	16.2656	in	$r_x =$	12.9509	in	$C_{bottom} =$	16.2656	in	$r_x =$	12.9509	in
J =	2.7955	in <sup>4</sup>	Z =	280.96	in <sup>3</sup>	Z =	280.96	in <sup>3</sup>			



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Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	11.6367	4.0000	46.5469	0.1364	0.0000	0.0000	0.1364
2	Top Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange	6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>		<b>23.64</b>		<b>94.55</b>	<b>64.14</b>		<b>0.00</b>	<b>64.14</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000 in	S <sub>right</sub> =	16.03 in <sup>3</sup>	x-bar =	4.0000 in	S <sub>right</sub> =	16.03 in <sup>3</sup>
I <sub>y</sub> =	64.14 in <sup>4</sup>	S <sub>left</sub> =	16.03 in <sup>3</sup>	I <sub>y</sub> =	64.14 in <sup>4</sup>	S <sub>left</sub> =	16.03 in <sup>3</sup>
C <sub>right</sub> =	4.0000 in	A =	23.6367 in <sup>2</sup>	C <sub>right</sub> =	4.0000 in	A =	23.6367 in <sup>2</sup>
C <sub>left</sub> =	4.0000 in	r <sub>y</sub> =	1.6472 in	C <sub>left</sub> =	4.0000 in	r <sub>y</sub> =	1.6472 in

Non-composite Capacities*		
	AB	AI
M	842.89 k-ft	842.89 k-ft
V	207.62 k	207.62 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear





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Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

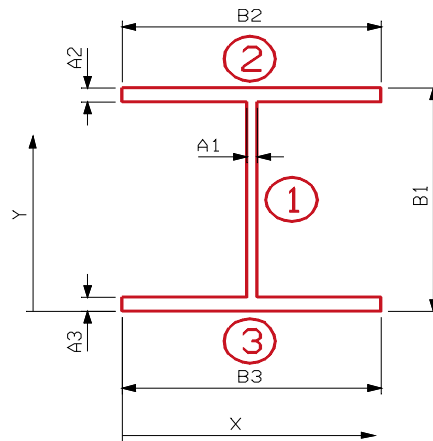
Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 13.9375$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.7500$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in

$d_o = \text{N/A}$  in

$d_o =$  stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F2-22 @ FB G6**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		4.6641	6.9688	32.5027	60.1242	0.2153	0.2162	60.3404
2	Top Flange		6.5625	13.5625	89.0039	0.3076	6.3784	266.9923	267.3000
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	6.8091	278.1795	278.4607
<b>Total</b>			<b>17.23</b>		<b>123.76</b>	<b>60.71</b>		<b>545.39</b>	<b>606.10</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
y-bar =	7.1841	in	$S_{top} =$	89.75	in <sup>3</sup>	y-bar =	7.1841	in	$S_{top} =$	89.75	in <sup>3</sup>
$I_x =$	606.10	in <sup>4</sup>	$S_{bott.} =$	84.37	in <sup>3</sup>	$I_x =$	606.10	in <sup>4</sup>	$S_{bott.} =$	84.37	in <sup>3</sup>
$C_{top} =$	6.7534	in	A =	17.2266	in <sup>2</sup>	$C_{top} =$	6.7534	in	A =	17.2266	in <sup>2</sup>
$C_{bottom} =$	7.1841	in	$r_x =$	5.9316	in	$C_{bottom} =$	7.1841	in	$r_x =$	5.9316	in
J =	2.5741	in <sup>4</sup>	Z =	97.13	in <sup>3</sup>	Z =	97.13	in <sup>3</sup>			



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Date 3/16/2012  
Date 3/26/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		4.6641	4.3750	20.4053	0.0547	0.0000	0.0000	0.0547
2	Top Flange		6.5625	4.3750	28.7109	41.8701	0.0000	0.0000	41.8701
3	Bottom Flange		6.0000	4.3750	26.2500	32.0000	0.0000	0.0000	32.0000
<b>Total</b>			<b>17.23</b>		<b>75.37</b>	<b>73.92</b>		<b>0.00</b>	<b>73.92</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.3750	in	S <sub>right</sub> = 16.90 in <sup>3</sup>	x-bar =	4.3750	in	S <sub>right</sub> = 16.90 in <sup>3</sup>
I <sub>y</sub> =	73.92	in <sup>4</sup>	S <sub>left</sub> = 16.90 in <sup>3</sup>	I <sub>y</sub> =	73.92	in <sup>4</sup>	S <sub>left</sub> = 16.90 in <sup>3</sup>
C <sub>right</sub> =	4.3750	in	A = 17.2266 in <sup>2</sup>	C <sub>right</sub> =	4.3750	in	A = 17.2266 in <sup>2</sup>
C <sub>left</sub> =	4.3750	in	r <sub>y</sub> = 2.0716 in	C <sub>left</sub> =	4.3750	in	r <sub>y</sub> = 2.0716 in

Non-composite Capacities*		
	AB	AI
M	291.38 k-ft	291.38 k-ft
V	97.39 k	97.39 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



Made By CTG  
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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

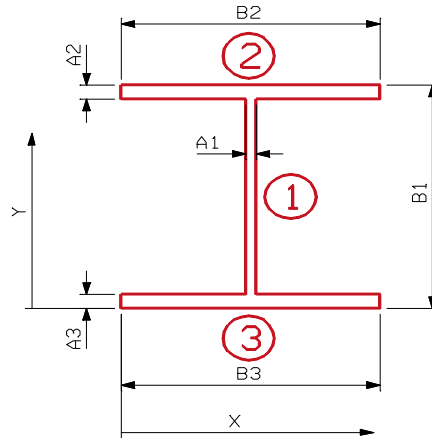
Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 24.1250$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.7500$  in

$d_o = 18.0000$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F1-1 @ FB H1**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		8.4844	12.0625	102.3428	361.9227	0.3124	0.8278	362.7505
2	Top Flange		6.0000	23.7500	142.5000	0.2813	11.9999	863.9800	864.2612
3	Bottom Flange		6.5625	0.3750	2.4609	0.3076	11.3751	849.1468	849.4544
<b>Total</b>			<b>21.05</b>		<b>247.30</b>	<b>362.51</b>		<b>1713.95</b>	<b>2076.47</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	11.7501	in	$S_{top} = 167.80$	$in^3$	y-bar =	11.7501	in	$S_{top} = 167.80$	$in^3$		
$I_x =$	2076.47	$in^4$	$S_{bott.} = 176.72$	$in^3$	$I_x =$	2076.47	$in^4$	$S_{bott.} = 176.72$	$in^3$		
$c_{top} =$	12.3749	in	A =	21.0469	$in^2$	$c_{top} =$	12.3749	in	A =	21.0469	$in^2$
$c_{bottom} =$	11.7501	in	$r_x =$	9.9327	in	$c_{bottom} =$	11.7501	in	$r_x =$	9.9327	in
J =	2.7532	$in^4$	Z =	194.60	$in^3$	Z =	194.60	$in^3$			



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		8.4844	4.3750	37.1191	0.0994	0.0000	0.0000	0.0994
2	Top Flange		6.0000	4.3750	26.2500	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange		6.5625	4.3750	28.7109	41.8701	0.0000	0.0000	41.8701
<b>Total</b>			<b>21.05</b>		<b>92.08</b>	<b>73.97</b>		<b>0.00</b>	<b>73.97</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.3750	in	S <sub>right</sub> = 16.91 in <sup>3</sup>	x-bar =	4.3750	in	S <sub>right</sub> = 16.91 in <sup>3</sup>
I <sub>y</sub> =	73.97	in <sup>4</sup>	S <sub>left</sub> = 16.91 in <sup>3</sup>	I <sub>y</sub> =	73.97	in <sup>4</sup>	S <sub>left</sub> = 16.91 in <sup>3</sup>
C <sub>right</sub> =	4.3750	in	A = 21.0469 in <sup>2</sup>	C <sub>right</sub> =	4.3750	in	A = 21.0469 in <sup>2</sup>
C <sub>left</sub> =	4.3750	in	r <sub>y</sub> = 1.8747 in	C <sub>left</sub> =	4.3750	in	r <sub>y</sub> = 1.8747 in

Non-composite Capacities*		
	AB	AI
<b>M</b>	583.81 k-ft	583.81 k-ft
<b>V</b>	177.15 k	177.15 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Job No. P402110046  
Sheet No. \_\_\_\_\_

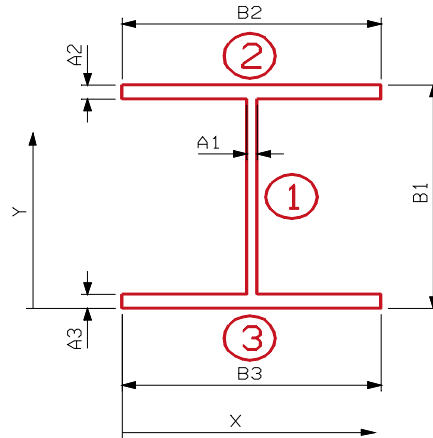
Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 48.4063$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in

$d_o = 18.0000$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F1-1 Avg Span 1**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		17.5898	24.2031	425.7292	3225.0924	0.0000	0.0000	3225.0924
2	Top Flange		6.0000	48.0313	288.1875	0.2813	23.8281	3406.6772	3406.9585
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	23.8281	3406.6772	3406.9585
<b>Total</b>			<b>29.59</b>		<b>716.17</b>	<b>3225.65</b>		<b>6813.35</b>	<b>10039.01</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	24.2031	in	$S_{top} = 414.78$	$in^3$	y-bar =	24.2031	in	$S_{top} = 414.78$	$in^3$		
$I_x =$	10039.01	$in^4$	$S_{bott.} = 414.78$	$in^3$	$I_x =$	10039.01	$in^4$	$S_{bott.} = 414.78$	$in^3$		
$C_{top} =$	24.2031	in	A =	29.5898	$in^2$	$C_{top} =$	24.2031	in	A =	29.5898	$in^2$
$C_{bottom} =$	24.2031	in	$r_x =$	18.4193	in	$C_{bottom} =$	24.2031	in	$r_x =$	18.4193	in
J =	3.0745	$in^4$	Z =	492.21	$in^3$				Z =	492.21	$in^3$



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		17.5898	4.0000	70.3594	0.2061	0.0000	0.0000	0.2061
2	Top Flange		6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange		6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>			<b>29.59</b>		<b>118.36</b>	<b>64.21</b>		<b>0.00</b>	<b>64.21</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 16.05 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 16.05 in <sup>3</sup>
I <sub>y</sub> =	64.21	in <sup>4</sup>	S <sub>left</sub> = 16.05 in <sup>3</sup>	I <sub>y</sub> =	64.21	in <sup>4</sup>	S <sub>left</sub> = 16.05 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 29.5898 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 29.5898 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.4730 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.4730 in

Non-composite Capacities*		
	AB	AI
<b>M</b>	#####	#####
<b>V</b>	367.28 k	367.28 k

\*Noncompact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Job No. P402110046  
Sheet No. \_\_\_\_\_

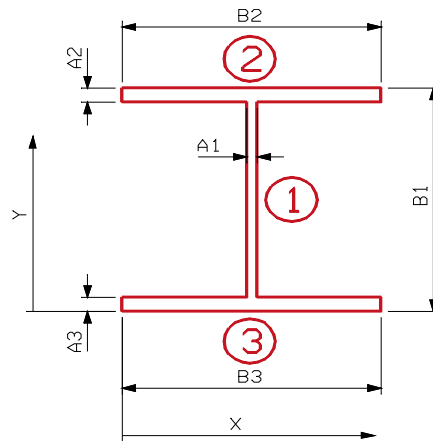
Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 46.4375$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in

$d_o = 18.0000$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F1-1 Avg Span 2**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		16.8516	23.2188	391.2722	2835.8075	0.0000	0.0000	2835.8075
2	Top Flange		6.0000	46.0625	276.3750	0.2813	22.8438	3131.0215	3131.3027
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	22.8438	3131.0215	3131.3027
<b>Total</b>			<b>28.85</b>		<b>669.90</b>	<b>2836.37</b>		<b>6262.04</b>	<b>9098.41</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	23.2188	in	$S_{top} = 391.86$	$in^3$	y-bar =	23.2188	in	$S_{top} = 391.86$	$in^3$		
$I_x =$	9098.41	$in^4$	$S_{bott.} = 391.86$	$in^3$	$I_x =$	9098.41	$in^4$	$S_{bott.} = 391.86$	$in^3$		
$C_{top} =$	23.2188	in	A =	28.8516	$in^2$	$C_{top} =$	23.2188	in	A =	28.8516	$in^2$
$C_{bottom} =$	23.2188	in	$r_x =$	17.7582	in	$C_{bottom} =$	23.2188	in	$r_x =$	17.7582	in
J =	3.0399	$in^4$	Z =	463.44	$in^3$				Z =	463.44	$in^3$



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		16.8516	4.0000	67.4063	0.1975	0.0000	0.0000	0.1975
2	Top Flange		6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange		6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>			<b>28.85</b>		<b>115.41</b>	<b>64.20</b>		<b>0.00</b>	<b>64.20</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 16.05 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 16.05 in <sup>3</sup>
I <sub>y</sub> =	64.20	in <sup>4</sup>	S <sub>left</sub> = 16.05 in <sup>3</sup>	I <sub>y</sub> =	64.20	in <sup>4</sup>	S <sub>left</sub> = 16.05 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 28.8516 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 28.8516 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.4917 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.4917 in

Non-composite Capacities*		
	AB	AI
<b>M</b>	#####	#####
<b>V</b>	351.86 k	351.86 k

\*Noncompact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear





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Job No. P402110046  
Sheet No. \_\_\_\_\_

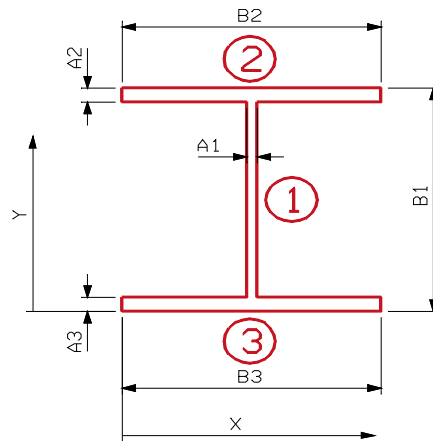
Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 42.7813$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in

$d_o = 18.0000$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F1-1 Avg Span 3**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		15.4805	21.3906	331.1369	2198.4092	0.0000	0.0000	2198.4092
2	Top Flange		6.0000	42.4063	254.4375	0.2813	21.0156	2649.9390	2650.2202
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	21.0156	2649.9390	2650.2202
<b>Total</b>			<b>27.48</b>		<b>587.82</b>	<b>2198.97</b>		<b>5299.88</b>	<b>7498.85</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	21.3906	in	$S_{top} = 350.57$	$in^3$	y-bar =	21.3906	in	$S_{top} = 350.57$	$in^3$		
$I_x =$	7498.85	$in^4$	$S_{bott.} = 350.57$	$in^3$	$I_x =$	7498.85	$in^4$	$S_{bott.} = 350.57$	$in^3$		
$C_{top} =$	21.3906	in	A =	27.4805	$in^2$	$C_{top} =$	21.3906	in	A =	27.4805	$in^2$
$C_{bottom} =$	21.3906	in	$r_x =$	16.5191	in	$C_{bottom} =$	21.3906	in	$r_x =$	16.5191	in
J =	2.9756	$in^4$	Z =	411.95	$in^3$				Z =	411.95	$in^3$



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		15.4805	4.0000	61.9219	0.1814	0.0000	0.0000	0.1814
2	Top Flange		6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange		6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>			<b>27.48</b>		<b>109.92</b>	<b>64.18</b>		<b>0.00</b>	<b>64.18</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	4.0000	in	S <sub>right</sub> =	16.05	in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> =	16.05	in <sup>3</sup>
I <sub>y</sub> =	64.18	in <sup>4</sup>	S <sub>left</sub> =	16.05	in <sup>3</sup>	I <sub>y</sub> =	64.18	in <sup>4</sup>	S <sub>left</sub> =	16.05	in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A =	27.4805	in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A =	27.4805	in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> =	1.5282	in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> =	1.5282	in

Non-composite Capacities*		
	AB	AI
<b>M</b>	#####	#####
<b>V</b>	323.23 k	323.23 k

\*Noncompact Section

<b>F<sub>y</sub> =</b>	<b>36.00 ksi</b>
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AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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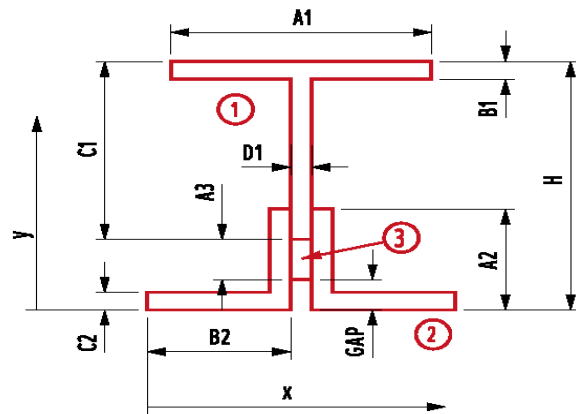
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	6.0000 in
$C_1 = d =$	14.5000 in	$C_2 = t =$	0.7500 in
$D_1 = t_w =$	0.3950 in		

Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	15.0000 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in



**Coped Stringer S4-1 @ FB H3**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	14.6675	99.4897	0.2500	8.8309	528.9715	529.2215
	Web	5.4648	7.4175	40.5353	87.1672	1.5809	13.6580	100.8253
2	Horizontal Legs	7.8750	0.3750	2.9531	0.3691	5.4616	234.9035	235.2726
	Vertical Legs	9.0000	3.0000	27.0000	27.0000	2.8366	72.4164	99.4164
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.3366	0.0000	0.0000
<b>Total</b>		<b>29.12</b>		<b>169.98</b>	<b>114.79</b>		<b>849.95</b>	<b>964.74</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	5.8366 in	S <sub>top</sub> =	105.28 in <sup>3</sup>	y-bar =	5.8366 in	S <sub>top</sub> =	105.28 in <sup>3</sup>
I <sub>x</sub> =	964.74 in <sup>4</sup>	S <sub>bott.</sub> =	165.29 in <sup>3</sup>	I <sub>x</sub> =	964.74 in <sup>4</sup>	S <sub>bott.</sub> =	165.29 in <sup>3</sup>
C <sub>top</sub> =	9.1634 in	A =	29.1228 in <sup>2</sup>	C <sub>top</sub> =	9.1634 in	A =	29.1228 in <sup>2</sup>
C <sub>bottom</sub> =	5.8366 in	r <sub>x</sub> =	5.7556 in	C <sub>bottom</sub> =	5.8366 in	r <sub>x</sub> =	5.7556 in
J =	4.4481 in <sup>4</sup>	Z =	139.16 in <sup>3</sup>			Z =	139.16 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	6.1975	42.0376	58.8086	0.0000	0.0000	58.8086
	Web		5.4648	6.1975	33.8683	0.0711	0.0000	0.0000	0.0711
2 (Left)	Horizontal Leg		3.9375	2.6250	10.3359	9.0439	3.5725	50.2534	59.2973
	Vertical Leg		4.5000	5.6250	25.3125	0.2109	0.5725	1.4749	1.6858
2 (Right)	Horizontal Leg		3.9375	9.7700	38.4694	9.0439	3.5725	50.2534	59.2973
	Vertical Leg		4.5000	6.7700	30.4650	0.2109	0.5725	1.4749	1.6858
3	Additional Plate		0.0000	6.1975	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>29.12</b>		<b>180.49</b>	<b>77.39</b>		<b>103.46</b>	<b>180.85</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.1975 in	S <sub>right</sub> =	29.18 in <sup>3</sup>	x-bar =	6.1975 in	S <sub>right</sub> =	29.18 in <sup>3</sup>
I <sub>y</sub> =	180.85 in <sup>4</sup>	S <sub>left</sub> =	29.18 in <sup>3</sup>	I <sub>y</sub> =	180.85 in <sup>4</sup>	S <sub>left</sub> =	29.18 in <sup>3</sup>
C <sub>right</sub> =	6.1975 in	A =	29.1228 in <sup>2</sup>	C <sub>right</sub> =	6.1975 in	A =	29.1228 in <sup>2</sup>
C <sub>left</sub> =	6.1975 in	r <sub>y</sub> =	2.4919 in	C <sub>left</sub> =	6.1975 in	r <sub>y</sub> =	2.4919 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
<b>M</b>	417.48 k-ft	417.48 k-ft
<b>V</b>	278.54 k	278.54 k

<b>F<sub>y</sub> =</b>	<b>36.00 ksi</b>
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\*Compact Section



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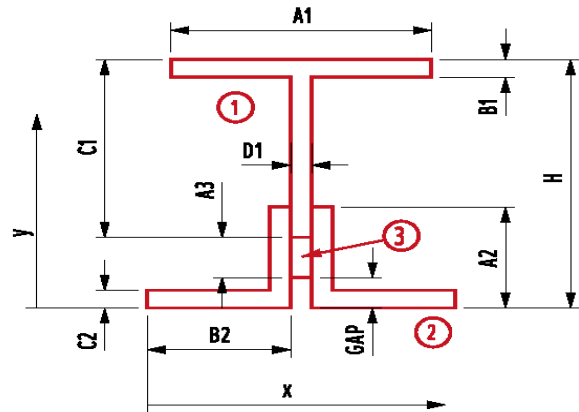
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	6.0000 in
$C_1 = d =$	14.5000 in	$C_2 = t =$	0.7500 in
$D_1 = t_w =$	0.3950 in		

Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	15.0000 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in



**Coped Stringer S4-1 @ FB H4**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	14.6675	99.4897	0.2500	8.8309	528.9715	529.2215
	Web	5.4648	7.4175	40.5353	87.1672	1.5809	13.6580	100.8253
2	Horizontal Legs	7.8750	0.3750	2.9531	0.3691	5.4616	234.9035	235.2726
	Vertical Legs	9.0000	3.0000	27.0000	27.0000	2.8366	72.4164	99.4164
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.3366	0.0000	0.0000
<b>Total</b>		<b>29.12</b>		<b>169.98</b>	<b>114.79</b>		<b>849.95</b>	<b>964.74</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	5.8366	in	S <sub>top</sub> =	105.28	in <sup>3</sup>	y-bar =	5.8366	in	S <sub>top</sub> =	105.28	in <sup>3</sup>
I <sub>x</sub> =	964.74	in <sup>4</sup>	S <sub>bott.</sub> =	165.29	in <sup>3</sup>	I <sub>x</sub> =	964.74	in <sup>4</sup>	S <sub>bott.</sub> =	165.29	in <sup>3</sup>
C <sub>top</sub> =	9.1634	in	A =	29.1228	in <sup>2</sup>	C <sub>top</sub> =	9.1634	in	A =	29.1228	in <sup>2</sup>
C <sub>bottom</sub> =	5.8366	in	r <sub>x</sub> =	5.7556	in	C <sub>bottom</sub> =	5.8366	in	r <sub>x</sub> =	5.7556	in
J =	4.4481	in <sup>4</sup>	Z =	139.16	in <sup>3</sup>	Z =	139.16	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	6.1975	42.0376	58.8086	0.0000	0.0000	58.8086
	Web		5.4648	6.1975	33.8683	0.0711	0.0000	0.0000	0.0711
2 (Left)	Horizontal Leg		3.9375	2.6250	10.3359	9.0439	3.5725	50.2534	59.2973
	Vertical Leg		4.5000	5.6250	25.3125	0.2109	0.5725	1.4749	1.6858
2 (Right)	Horizontal Leg		3.9375	9.7700	38.4694	9.0439	3.5725	50.2534	59.2973
	Vertical Leg		4.5000	6.7700	30.4650	0.2109	0.5725	1.4749	1.6858
3	Additional Plate		0.0000	6.1975	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>29.12</b>		<b>180.49</b>	<b>77.39</b>		<b>103.46</b>	<b>180.85</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	6.1975	in	S <sub>right</sub> =	29.18	in <sup>3</sup>	x-bar =	6.1975	in	S <sub>right</sub> =	29.18	in <sup>3</sup>
I <sub>y</sub> =	180.85	in <sup>4</sup>	S <sub>left</sub> =	29.18	in <sup>3</sup>	I <sub>y</sub> =	180.85	in <sup>4</sup>	S <sub>left</sub> =	29.18	in <sup>3</sup>
C <sub>right</sub> =	6.1975	in	A =	29.1228	in <sup>2</sup>	C <sub>right</sub> =	6.1975	in	A =	29.1228	in <sup>2</sup>
C <sub>left</sub> =	6.1975	in	r <sub>y</sub> =	2.4919	in	C <sub>left</sub> =	6.1975	in	r <sub>y</sub> =	2.4919	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
<b>M</b>	417.48 k-ft	417.48 k-ft
<b>V</b>	278.54 k	278.54 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	6.0000 in
$C_1 = d =$	14.5000 in	$C_2 = t =$	0.7500 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	15.0000 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

**Coped Stringer S5-1 @ FB H3**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	14.6675	99.4897	0.2500	8.8309	528.9715	529.2215
	Web	5.4648	7.4175	40.5353	87.1672	1.5809	13.6580	100.8253
2	Horizontal Legs	7.8750	0.3750	2.9531	0.3691	5.4616	234.9035	235.2726
	Vertical Legs	9.0000	3.0000	27.0000	27.0000	2.8366	72.4164	99.4164
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.3366	0.0000	0.0000
<b>Total</b>		<b>29.12</b>		<b>169.98</b>	<b>114.79</b>		<b>849.95</b>	<b>964.74</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>



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Date 3/27/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	5.8366 in	S <sub>top</sub> =	105.28 in <sup>3</sup>	y-bar =	5.8366 in	S <sub>top</sub> =	105.28 in <sup>3</sup>
I <sub>x</sub> =	964.74 in <sup>4</sup>	S <sub>bott.</sub> =	165.29 in <sup>3</sup>	I <sub>x</sub> =	964.74 in <sup>4</sup>	S <sub>bott.</sub> =	165.29 in <sup>3</sup>
C <sub>top</sub> =	9.1634 in	A =	29.1228 in <sup>2</sup>	C <sub>top</sub> =	9.1634 in	A =	29.1228 in <sup>2</sup>
C <sub>bottom</sub> =	5.8366 in	r <sub>x</sub> =	5.7556 in	C <sub>bottom</sub> =	5.8366 in	r <sub>x</sub> =	5.7556 in
J =	4.4481 in <sup>4</sup>	Z =	139.16 in <sup>3</sup>			Z =	139.16 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	6.1975	42.0376	58.8086	0.0000	0.0000	58.8086
	Web		5.4648	6.1975	33.8683	0.0711	0.0000	0.0000	0.0711
2 (Left)	Horizontal Leg		3.9375	2.6250	10.3359	9.0439	3.5725	50.2534	59.2973
	Vertical Leg		4.5000	5.6250	25.3125	0.2109	0.5725	1.4749	1.6858
2 (Right)	Horizontal Leg		3.9375	9.7700	38.4694	9.0439	3.5725	50.2534	59.2973
	Vertical Leg		4.5000	6.7700	30.4650	0.2109	0.5725	1.4749	1.6858
3	Additional Plate		0.0000	6.1975	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>29.12</b>		<b>180.49</b>	<b>77.39</b>		<b>103.46</b>	<b>180.85</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.1975 in	S <sub>right</sub> =	29.18 in <sup>3</sup>	x-bar =	6.1975 in	S <sub>right</sub> =	29.18 in <sup>3</sup>
I <sub>y</sub> =	180.85 in <sup>4</sup>	S <sub>left</sub> =	29.18 in <sup>3</sup>	I <sub>y</sub> =	180.85 in <sup>4</sup>	S <sub>left</sub> =	29.18 in <sup>3</sup>
C <sub>right</sub> =	6.1975 in	A =	29.1228 in <sup>2</sup>	C <sub>right</sub> =	6.1975 in	A =	29.1228 in <sup>2</sup>
C <sub>left</sub> =	6.1975 in	r <sub>y</sub> =	2.4919 in	C <sub>left</sub> =	6.1975 in	r <sub>y</sub> =	2.4919 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
<b>M</b>	417.48 k-ft	417.48 k-ft
<b>V</b>	278.54 k	278.54 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section





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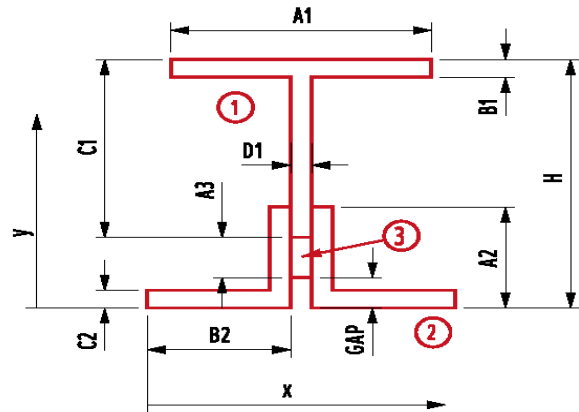
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	6.0000 in
$C_1 = d =$	14.5000 in	$C_2 = t =$	0.7500 in
$D_1 = t_w =$	0.3950 in		

Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	15.0000 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in



**Coped Stringer S5-1 @ FB H4**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	14.6675	99.4897	0.2500	8.8309	528.9715	529.2215
	Web	5.4648	7.4175	40.5353	87.1672	1.5809	13.6580	100.8253
2	Horizontal Legs	7.8750	0.3750	2.9531	0.3691	5.4616	234.9035	235.2726
	Vertical Legs	9.0000	3.0000	27.0000	27.0000	2.8366	72.4164	99.4164
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.3366	0.0000	0.0000
<b>Total</b>		<b>29.12</b>		<b>169.98</b>	<b>114.79</b>		<b>849.95</b>	<b>964.74</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	5.8366 in	S <sub>top</sub> =	105.28 in <sup>3</sup>	y-bar =	5.8366 in	S <sub>top</sub> =	105.28 in <sup>3</sup>
I <sub>x</sub> =	964.74 in <sup>4</sup>	S <sub>bott.</sub> =	165.29 in <sup>3</sup>	I <sub>x</sub> =	964.74 in <sup>4</sup>	S <sub>bott.</sub> =	165.29 in <sup>3</sup>
C <sub>top</sub> =	9.1634 in	A =	29.1228 in <sup>2</sup>	C <sub>top</sub> =	9.1634 in	A =	29.1228 in <sup>2</sup>
C <sub>bottom</sub> =	5.8366 in	r <sub>x</sub> =	5.7556 in	C <sub>bottom</sub> =	5.8366 in	r <sub>x</sub> =	5.7556 in
J =	4.4481 in <sup>4</sup>	Z =	139.16 in <sup>3</sup>			Z =	139.16 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	6.1975	42.0376	58.8086	0.0000	0.0000	58.8086
	Web		5.4648	6.1975	33.8683	0.0711	0.0000	0.0000	0.0711
2 (Left)	Horizontal Leg		3.9375	2.6250	10.3359	9.0439	3.5725	50.2534	59.2973
	Vertical Leg		4.5000	5.6250	25.3125	0.2109	0.5725	1.4749	1.6858
2 (Right)	Horizontal Leg		3.9375	9.7700	38.4694	9.0439	3.5725	50.2534	59.2973
	Vertical Leg		4.5000	6.7700	30.4650	0.2109	0.5725	1.4749	1.6858
3	Additional Plate		0.0000	6.1975	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>29.12</b>		<b>180.49</b>	<b>77.39</b>		<b>103.46</b>	<b>180.85</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.1975 in	S <sub>right</sub> =	29.18 in <sup>3</sup>	x-bar =	6.1975 in	S <sub>right</sub> =	29.18 in <sup>3</sup>
I <sub>y</sub> =	180.85 in <sup>4</sup>	S <sub>left</sub> =	29.18 in <sup>3</sup>	I <sub>y</sub> =	180.85 in <sup>4</sup>	S <sub>left</sub> =	29.18 in <sup>3</sup>
C <sub>right</sub> =	6.1975 in	A =	29.1228 in <sup>2</sup>	C <sub>right</sub> =	6.1975 in	A =	29.1228 in <sup>2</sup>
C <sub>left</sub> =	6.1975 in	r <sub>y</sub> =	2.4919 in	C <sub>left</sub> =	6.1975 in	r <sub>y</sub> =	2.4919 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
<b>M</b>	417.48 k-ft	417.48 k-ft
<b>V</b>	278.54 k	278.54 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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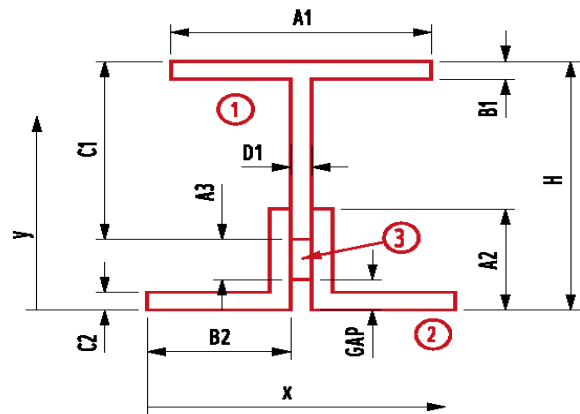
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	14.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		

Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	15.0000 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in



**Coped Stringer S6-1 @ FB H2**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	14.6675	99.4897	0.2500	7.3610	367.5345	367.7845
	Web	5.4648	7.4175	40.5353	87.1672	0.1110	0.0674	87.2346
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	7.0565	174.2786	174.3515
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.3065	111.2745	129.2745
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.8065	0.0000	0.0000
<b>Total</b>		<b>21.75</b>		<b>158.90</b>	<b>105.49</b>		<b>653.15</b>	<b>758.65</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	7.3065 in	S <sub>top</sub> =	98.61 in <sup>3</sup>	y-bar =	7.3065 in	S <sub>top</sub> =	98.61 in <sup>3</sup>
I <sub>x</sub> =	758.65 in <sup>4</sup>	S <sub>bott.</sub> =	103.83 in <sup>3</sup>	I <sub>x</sub> =	758.65 in <sup>4</sup>	S <sub>bott.</sub> =	103.83 in <sup>3</sup>
C <sub>top</sub> =	7.6935 in	A =	21.7478 in <sup>2</sup>	C <sub>top</sub> =	7.6935 in	A =	21.7478 in <sup>2</sup>
C <sub>bottom</sub> =	7.3065 in	r <sub>x</sub> =	5.9062 in	C <sub>bottom</sub> =	7.3065 in	r <sub>x</sub> =	5.9062 in
J =	2.0758 in <sup>4</sup>	Z =	116.15 in <sup>3</sup>			Z =	116.15 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		5.4648	4.1975	22.9386	0.0711	0.9025	4.4511	4.5222
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.75</b>		<b>91.29</b>	<b>62.58</b>		<b>39.88</b>	<b>102.46</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.1000 in	S <sub>right</sub> =	20.09 in <sup>3</sup>	x-bar =	5.1000 in	S <sub>right</sub> =	20.09 in <sup>3</sup>
I <sub>y</sub> =	102.46 in <sup>4</sup>	S <sub>left</sub> =	20.09 in <sup>3</sup>	I <sub>y</sub> =	102.46 in <sup>4</sup>	S <sub>left</sub> =	20.09 in <sup>3</sup>
C <sub>right</sub> =	5.1000 in	A =	21.7478 in <sup>2</sup>	C <sub>right</sub> =	5.1000 in	A =	21.7478 in <sup>2</sup>
C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.1705 in	C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.1705 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
<b>M</b>	348.45 k-ft	348.45 k-ft
<b>V</b>	228.95 k	228.95 k

<b>F<sub>y</sub> =</b>	<b>36.00 ksi</b>
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\*Compact Section



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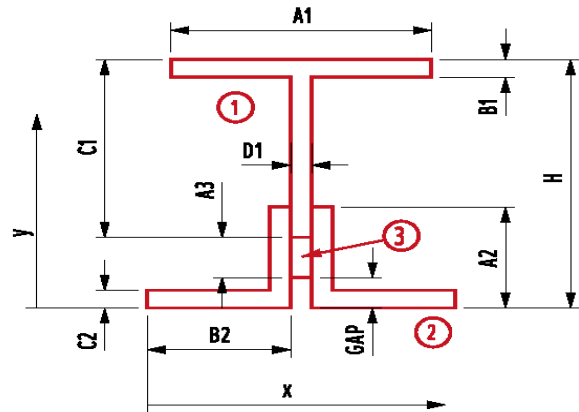
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	14.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		

Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	15.0000 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in



**Coped Stringer S6-1 @ FB H3**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	14.6675	99.4897	0.2500	7.3610	367.5345	367.7845
	Web	5.4648	7.4175	40.5353	87.1672	0.1110	0.0674	87.2346
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	7.0565	174.2786	174.3515
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.3065	111.2745	129.2745
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.8065	0.0000	0.0000
<b>Total</b>		<b>21.75</b>		<b>158.90</b>	<b>105.49</b>		<b>653.15</b>	<b>758.65</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>



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Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	7.3065	in	S <sub>top</sub> =	98.61	in <sup>3</sup>	y-bar =	7.3065	in	S <sub>top</sub> =	98.61	in <sup>3</sup>
I <sub>x</sub> =	758.65	in <sup>4</sup>	S <sub>bott.</sub> =	103.83	in <sup>3</sup>	I <sub>x</sub> =	758.65	in <sup>4</sup>	S <sub>bott.</sub> =	103.83	in <sup>3</sup>
C <sub>top</sub> =	7.6935	in	A =	21.7478	in <sup>2</sup>	C <sub>top</sub> =	7.6935	in	A =	21.7478	in <sup>2</sup>
C <sub>bottom</sub> =	7.3065	in	r <sub>x</sub> =	5.9062	in	C <sub>bottom</sub> =	7.3065	in	r <sub>x</sub> =	5.9062	in
J =	2.0758	in <sup>4</sup>	Z =	116.15	in <sup>3</sup>	Z =	116.15	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		5.4648	4.1975	22.9386	0.0711	0.9025	4.4511	4.5222
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.75</b>		<b>91.29</b>	<b>62.58</b>		<b>39.88</b>	<b>102.46</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.1000	in	S <sub>right</sub> =	20.09	in <sup>3</sup>	x-bar =	5.1000	in	S <sub>right</sub> =	20.09	in <sup>3</sup>
I <sub>y</sub> =	102.46	in <sup>4</sup>	S <sub>left</sub> =	20.09	in <sup>3</sup>	I <sub>y</sub> =	102.46	in <sup>4</sup>	S <sub>left</sub> =	20.09	in <sup>3</sup>
C <sub>right</sub> =	5.1000	in	A =	21.7478	in <sup>2</sup>	C <sub>right</sub> =	5.1000	in	A =	21.7478	in <sup>2</sup>
C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1705	in	C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1705	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
<b>M</b>	348.45 k-ft	348.45 k-ft
<b>V</b>	228.95 k	228.95 k

<b>F<sub>y</sub> =</b>	<b>36.00 ksi</b>
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\*Compact Section



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Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	13.0000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	13.5000 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

**Coped Stringer S6-1 @ FB H4**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	13.1675	89.3152	0.2500	6.5178	288.1543	288.4042
	Web	4.8723	6.6675	32.4862	61.7779	0.0178	0.0015	61.7795
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.3997	143.3462	143.4191
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.6497	79.9215	97.9215
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.1497	0.0000	0.0000
<b>Total</b>		<b>21.16</b>		<b>140.68</b>	<b>80.10</b>		<b>511.42</b>	<b>591.52</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.6497 in	S <sub>top</sub> =	86.35 in <sup>3</sup>	y-bar =	6.6497 in	S <sub>top</sub> =	86.35 in <sup>3</sup>
I <sub>x</sub> =	591.52 in <sup>4</sup>	S <sub>bott.</sub> =	88.96 in <sup>3</sup>	I <sub>x</sub> =	591.52 in <sup>4</sup>	S <sub>bott.</sub> =	88.96 in <sup>3</sup>
C <sub>top</sub> =	6.8503 in	A =	21.1553 in <sup>2</sup>	C <sub>top</sub> =	6.8503 in	A =	21.1553 in <sup>2</sup>
C <sub>bottom</sub> =	6.6497 in	r <sub>x</sub> =	5.2878 in	C <sub>bottom</sub> =	6.6497 in	r <sub>x</sub> =	5.2878 in
J =	2.0449 in <sup>4</sup>	Z =	101.08 in <sup>3</sup>			Z =	101.08 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web	4.8723	4.1975	20.4516	0.0634	0.9025	3.9685	4.0319
2 (Left)	Horizontal Leg	1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg	3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg	1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg	3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate	0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>		<b>21.16</b>		<b>88.80</b>	<b>62.57</b>		<b>39.40</b>	<b>101.97</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.1000 in	S <sub>right</sub> =	19.99 in <sup>3</sup>	x-bar =	5.1000 in	S <sub>right</sub> =	19.99 in <sup>3</sup>
I <sub>y</sub> =	101.97 in <sup>4</sup>	S <sub>left</sub> =	19.99 in <sup>3</sup>	I <sub>y</sub> =	101.97 in <sup>4</sup>	S <sub>left</sub> =	19.99 in <sup>3</sup>
C <sub>right</sub> =	5.1000 in	A =	21.1553 in <sup>2</sup>	C <sub>right</sub> =	5.1000 in	A =	21.1553 in <sup>2</sup>
C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.1954 in	C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.1954 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
<b>M</b>	303.24 k-ft	303.24 k-ft
<b>V</b>	216.57 k	216.57 k

<b>F<sub>y</sub> =</b>	<b>36.00 ksi</b>
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\*Compact Section





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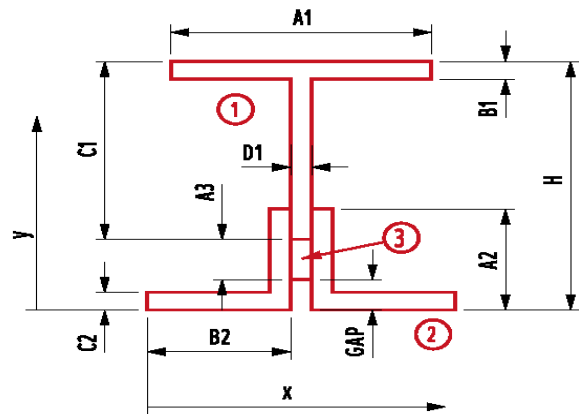
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	12.2500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		

Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	12.7500 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in



**Coped Stringer S7-1 @ FB H2**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	12.4175	84.2279	0.2500	6.0942	251.9170	252.1670
	Web	4.5761	6.2925	28.7950	51.1804	0.0308	0.0043	51.1848
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.0733	129.0967	129.1696
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.3233	66.2653	84.2653
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.8233	0.0000	0.0000
<b>Total</b>		<b>20.86</b>		<b>131.90</b>	<b>69.50</b>		<b>447.28</b>	<b>516.79</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.3233 in	S <sub>top</sub> =	80.41 in <sup>3</sup>	y-bar =	6.3233 in	S <sub>top</sub> =	80.41 in <sup>3</sup>
I <sub>x</sub> =	516.79 in <sup>4</sup>	S <sub>bott.</sub> =	81.73 in <sup>3</sup>	I <sub>x</sub> =	516.79 in <sup>4</sup>	S <sub>bott.</sub> =	81.73 in <sup>3</sup>
C <sub>top</sub> =	6.4267 in	A =	20.8591 in <sup>2</sup>	C <sub>top</sub> =	6.4267 in	A =	20.8591 in <sup>2</sup>
C <sub>bottom</sub> =	6.3233 in	r <sub>x</sub> =	4.9775 in	C <sub>bottom</sub> =	6.3233 in	r <sub>x</sub> =	4.9775 in
J =	2.0295 in <sup>4</sup>	Z =	93.83 in <sup>3</sup>			Z =	93.83 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web	4.5761	4.1975	19.2081	0.0595	0.9025	3.7272	3.7867
2 (Left)	Horizontal Leg	1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg	3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg	1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg	3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate	0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>		<b>20.86</b>		<b>87.56</b>	<b>62.57</b>		<b>39.16</b>	<b>101.72</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.1000 in	S <sub>right</sub> =	19.95 in <sup>3</sup>	x-bar =	5.1000 in	S <sub>right</sub> =	19.95 in <sup>3</sup>
I <sub>y</sub> =	101.72 in <sup>4</sup>	S <sub>left</sub> =	19.95 in <sup>3</sup>	I <sub>y</sub> =	101.72 in <sup>4</sup>	S <sub>left</sub> =	19.95 in <sup>3</sup>
C <sub>right</sub> =	5.1000 in	A =	20.8591 in <sup>2</sup>	C <sub>right</sub> =	5.1000 in	A =	20.8591 in <sup>2</sup>
C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.2083 in	C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.2083 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
<b>M</b>	281.49 k-ft	281.49 k-ft
<b>V</b>	210.39 k	210.39 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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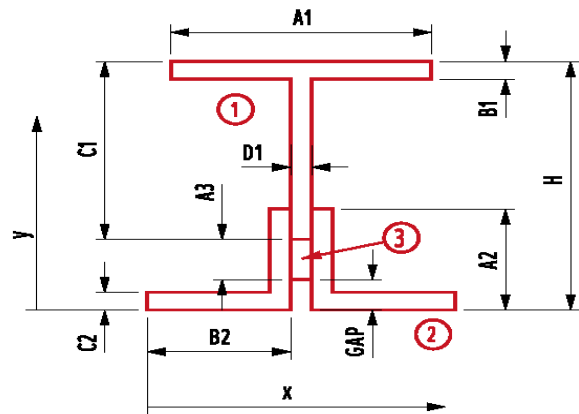
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	11.8125 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		

Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	12.9375 in
$B_3 = t =$	0.3950 in	Gap =	1.1250 in



**Coped Stringer S7-1 @ FB H3**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	12.6050	85.4997	0.2500	6.1335	255.1756	255.4255
	Web	4.4033	6.6988	29.4964	45.5983	0.2273	0.2274	45.8257
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.2215	135.4746	135.5475
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.4715	72.3077	90.3077
3	Additional Plate	0.0000	1.1250	0.0000	0.0000	5.3465	0.0000	0.0000
<b>Total</b>		<b>20.69</b>		<b>133.87</b>	<b>63.92</b>		<b>463.19</b>	<b>527.11</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.4715 in	S <sub>top</sub> =	81.52 in <sup>3</sup>	y-bar =	6.4715 in	S <sub>top</sub> =	81.52 in <sup>3</sup>
I <sub>x</sub> =	527.11 in <sup>4</sup>	S <sub>bott.</sub> =	81.45 in <sup>3</sup>	I <sub>x</sub> =	527.11 in <sup>4</sup>	S <sub>bott.</sub> =	81.45 in <sup>3</sup>
C <sub>top</sub> =	6.4660 in	A =	20.6863 in <sup>2</sup>	C <sub>top</sub> =	6.4660 in	A =	20.6863 in <sup>2</sup>
C <sub>bottom</sub> =	6.4715 in	r <sub>x</sub> =	5.0479 in	C <sub>bottom</sub> =	6.4715 in	r <sub>x</sub> =	5.0479 in
J =	2.0205 in <sup>4</sup>	Z =	94.55 in <sup>3</sup>			Z =	94.55 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		4.4033	4.1975	18.4827	0.0573	0.9025	3.5865	3.6437
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>20.69</b>		<b>86.83</b>	<b>62.56</b>		<b>39.02</b>	<b>101.58</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.1000 in	S <sub>right</sub> =	19.92 in <sup>3</sup>	x-bar =	5.1000 in	S <sub>right</sub> =	19.92 in <sup>3</sup>
I <sub>y</sub> =	101.58 in <sup>4</sup>	S <sub>left</sub> =	19.92 in <sup>3</sup>	I <sub>y</sub> =	101.58 in <sup>4</sup>	S <sub>left</sub> =	19.92 in <sup>3</sup>
C <sub>right</sub> =	5.1000 in	A =	20.6863 in <sup>2</sup>	C <sub>right</sub> =	5.1000 in	A =	20.6863 in <sup>2</sup>
C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.2160 in	C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.2160 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
<b>M</b>	283.65 k-ft	283.65 k-ft
<b>V</b>	206.78 k	206.78 k

<b>F<sub>y</sub> =</b>	<b>36.00 ksi</b>
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\*Compact Section



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	11.6875 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	12.1875 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

**Coped Stringer S7-1 @ FB H4**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	11.8550	80.4125	0.2500	5.7756	226.2648	226.5147
	Web	4.3539	6.0113	26.1723	44.0815	0.0681	0.0202	44.1017
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.8294	118.9364	119.0093
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.0794	56.8960	74.8960
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.5794	0.0000	0.0000
<b>Total</b>		<b>20.64</b>		<b>125.46</b>	<b>62.40</b>		<b>402.12</b>	<b>464.52</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	6.0794	in	S <sub>top</sub> =	76.05	in <sup>3</sup>	y-bar =	6.0794	in	S <sub>top</sub> =	76.05	in <sup>3</sup>
I <sub>x</sub> =	464.52	in <sup>4</sup>	S <sub>bott.</sub> =	76.41	in <sup>3</sup>	I <sub>x</sub> =	464.52	in <sup>4</sup>	S <sub>bott.</sub> =	76.41	in <sup>3</sup>
C <sub>top</sub> =	6.1081	in	A =	20.6369	in <sup>2</sup>	C <sub>top</sub> =	6.1081	in	A =	20.6369	in <sup>2</sup>
C <sub>bottom</sub> =	6.0794	in	r <sub>x</sub> =	4.7444	in	C <sub>bottom</sub> =	6.0794	in	r <sub>x</sub> =	4.7444	in
J =	2.0180	in <sup>4</sup>	Z =	88.52	in <sup>3</sup>	Z =	88.52	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web	4.3539	4.1975	18.2754	0.0566	0.9025	3.5463	3.6029
2 (Left)	Horizontal Leg	1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg	3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg	1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg	3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate	0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>		<b>20.64</b>		<b>86.62</b>	<b>62.56</b>		<b>38.98</b>	<b>101.54</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.1000	in	S <sub>right</sub> =	19.91	in <sup>3</sup>	x-bar =	5.1000	in	S <sub>right</sub> =	19.91	in <sup>3</sup>
I <sub>y</sub> =	101.54	in <sup>4</sup>	S <sub>left</sub> =	19.91	in <sup>3</sup>	I <sub>y</sub> =	101.54	in <sup>4</sup>	S <sub>left</sub> =	19.91	in <sup>3</sup>
C <sub>right</sub> =	5.1000	in	A =	20.6369	in <sup>2</sup>	C <sub>right</sub> =	5.1000	in	A =	20.6369	in <sup>2</sup>
C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.2182	in	C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.2182	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
<b>M</b>	265.56 k-ft	265.56 k-ft
<b>V</b>	205.75 k	205.75 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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Job No. P402110046  
Sheet No. \_\_\_\_\_

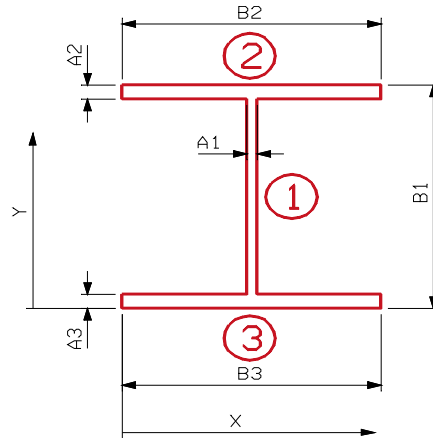
Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 14.1250$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.7500$  in

$d_o = 18.0000$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F2-1 @ FB H1**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		4.7344	7.0625	33.4365	62.8846	0.2175	0.2239	63.1085
2	Top Flange		6.0000	13.7500	82.5000	0.2813	6.9050	286.0725	286.3537
3	Bottom Flange		6.5625	0.3750	2.4609	0.3076	6.4700	274.7139	275.0215
<b>Total</b>			<b>17.30</b>		<b>118.40</b>	<b>63.47</b>		<b>561.01</b>	<b>624.48</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
y-bar =	6.8450	in	$S_{top} =$	85.78	in <sup>3</sup>	y-bar =	6.8450	in	$S_{top} =$	85.78	in <sup>3</sup>
$I_x =$	624.48	in <sup>4</sup>	$S_{bott.} =$	91.23	in <sup>3</sup>	$I_x =$	624.48	in <sup>4</sup>	$S_{bott.} =$	91.23	in <sup>3</sup>
$c_{top} =$	7.2800	in	A =	17.2969	in <sup>2</sup>	$c_{top} =$	7.2800	in	A =	17.2969	in <sup>2</sup>
$c_{bottom} =$	6.8450	in	$r_x =$	6.0086	in	$c_{bottom} =$	6.8450	in	$r_x =$	6.0086	in
J =	2.5774	in <sup>4</sup>	Z =	98.74	in <sup>3</sup>	Z =	98.74	in <sup>3</sup>			



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		4.7344	4.3750	20.7129	0.0555	0.0000	0.0000	0.0555
2	Top Flange		6.0000	4.3750	26.2500	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange		6.5625	4.3750	28.7109	41.8701	0.0000	0.0000	41.8701
<b>Total</b>			<b>17.30</b>		<b>75.67</b>	<b>73.93</b>		<b>0.00</b>	<b>73.93</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	4.3750	in	S <sub>right</sub> =	16.90	in <sup>3</sup>	x-bar =	4.3750	in	S <sub>right</sub> =	16.90	in <sup>3</sup>
I <sub>y</sub> =	73.93	in <sup>4</sup>	S <sub>left</sub> =	16.90	in <sup>3</sup>	I <sub>y</sub> =	73.93	in <sup>4</sup>	S <sub>left</sub> =	16.90	in <sup>3</sup>
C <sub>right</sub> =	4.3750	in	A =	17.2969	in <sup>2</sup>	C <sub>right</sub> =	4.3750	in	A =	17.2969	in <sup>2</sup>
C <sub>left</sub> =	4.3750	in	r <sub>y</sub> =	2.0673	in	C <sub>left</sub> =	4.3750	in	r <sub>y</sub> =	2.0673	in

Non-composite Capacities*		
	AB	AI
<b>M</b>	296.23 k-ft	296.23 k-ft
<b>V</b>	98.85 k	98.85 k

\*Compact Section

<b>F<sub>y</sub> =</b>	<b>36.00 ksi</b>
------------------------	------------------

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear





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Sheet No. \_\_\_\_\_

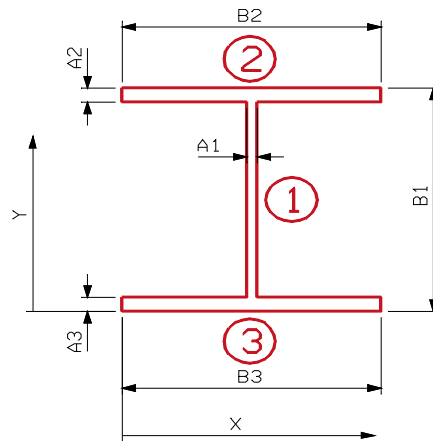
Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 31.4375$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in

$d_o = 18.0000$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F2-1 Avg Span 1**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		11.2266	15.7188	176.4675	838.4875	0.0000	0.0000	838.4875
2	Top Flange		6.0000	31.0625	186.3750	0.2813	15.3438	1412.5840	1412.8652
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	15.3438	1412.5840	1412.8652
<b>Total</b>			<b>23.23</b>		<b>365.09</b>	<b>839.05</b>		<b>2825.17</b>	<b>3664.22</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
y-bar =	15.7188	in	$S_{top} =$	233.11	in <sup>3</sup>	y-bar =	15.7188	in	$S_{top} =$	233.11	in <sup>3</sup>
$I_x =$	3664.22	in <sup>4</sup>	$S_{bott.} =$	233.11	in <sup>3</sup>	$I_x =$	3664.22	in <sup>4</sup>	$S_{bott.} =$	233.11	in <sup>3</sup>
$c_{top} =$	15.7188	in	A =	23.2266	in <sup>2</sup>	$c_{top} =$	15.7188	in	A =	23.2266	in <sup>2</sup>
$c_{bottom} =$	15.7188	in	$r_x =$	12.5602	in	$c_{bottom} =$	15.7188	in	$r_x =$	12.5602	in
J =	2.7762	in <sup>4</sup>	Z =	268.15	in <sup>3</sup>				Z =	268.15	in <sup>3</sup>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		11.2266	4.0000	44.9063	0.1316	0.0000	0.0000	0.1316
2	Top Flange		6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange		6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>			<b>23.23</b>		<b>92.91</b>	<b>64.13</b>		<b>0.00</b>	<b>64.13</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 16.03 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 16.03 in <sup>3</sup>
I <sub>y</sub> =	64.13	in <sup>4</sup>	S <sub>left</sub> = 16.03 in <sup>3</sup>	I <sub>y</sub> =	64.13	in <sup>4</sup>	S <sub>left</sub> = 16.03 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 23.2266 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 23.2266 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.6617 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.6617 in

Non-composite Capacities*		
	AB	AI
<b>M</b>	804.45 k-ft	804.45 k-ft
<b>V</b>	234.41 k	234.41 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Job No. P402110046  
Sheet No. \_\_\_\_\_

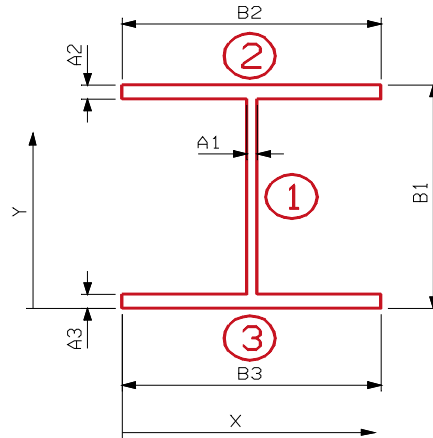
Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 33.0000$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in

$d_o = 18.0000$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F2-1 Avg Spans 2 & 3**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		11.8125	16.5000	194.9063	976.7461	0.0000	0.0000	976.7461
2	Top Flange		6.0000	32.6250	195.7500	0.2813	16.1250	1560.0938	1560.3750
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	16.1250	1560.0938	1560.3750
<b>Total</b>			<b>23.81</b>		<b>392.91</b>	<b>977.31</b>		<b>3120.19</b>	<b>4097.50</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	16.5000	in	$S_{top} = 248.33$	$in^3$	y-bar =	16.5000	in	$S_{top} = 248.33$	$in^3$		
$I_x =$	4097.50	$in^4$	$S_{bott.} = 248.33$	$in^3$	$I_x =$	4097.50	$in^4$	$S_{bott.} = 248.33$	$in^3$		
$c_{top} =$	16.5000	in	A =	23.8125	$in^2$	$c_{top} =$	16.5000	in	A =	23.8125	$in^2$
$c_{bottom} =$	16.5000	in	$r_x =$	13.1177	in	$c_{bottom} =$	16.5000	in	$r_x =$	13.1177	in
J =	2.8037	$in^4$	Z =	286.52	$in^3$				Z =	286.52	$in^3$



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		11.8125	4.0000	47.2500	0.1384	0.0000	0.0000	0.1384
2	Top Flange		6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange		6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>			<b>23.81</b>		<b>95.25</b>	<b>64.14</b>		<b>0.00</b>	<b>64.14</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 16.03 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 16.03 in <sup>3</sup>
I <sub>y</sub> =	64.14	in <sup>4</sup>	S <sub>left</sub> = 16.03 in <sup>3</sup>	I <sub>y</sub> =	64.14	in <sup>4</sup>	S <sub>left</sub> = 16.03 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 23.8125 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 23.8125 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.6412 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.6412 in

Non-composite Capacities*		
	AB	AI
<b>M</b>	859.57 k-ft	859.57 k-ft
<b>V</b>	246.65 k	246.65 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Job No. P402110046  
Sheet No. \_\_\_\_\_

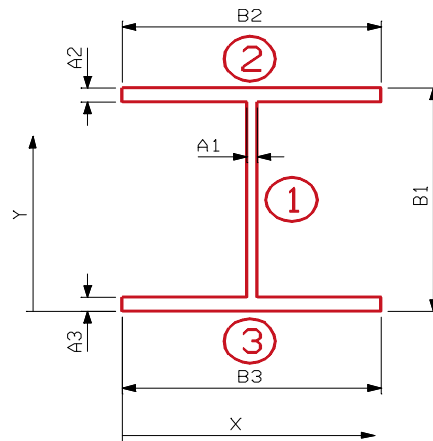
Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 42.4688$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in

$d_o = N/A$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F1-2 Avg Span 1**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		15.3633	21.2344	326.2297	2148.8602	0.0000	0.0000	2148.8602
2	Top Flange		6.0000	42.0938	252.5625	0.2813	20.8594	2610.6812	2610.9624
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	20.8594	2610.6812	2610.9624
<b>Total</b>			<b>27.36</b>		<b>581.04</b>	<b>2149.42</b>		<b>5221.36</b>	<b>7370.79</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	21.2344	in	$S_{top} = 347.12$	$in^3$	y-bar =	21.2344	in	$S_{top} = 347.12$	$in^3$		
$I_x =$	7370.79	$in^4$	$S_{bott.} = 347.12$	$in^3$	$I_x =$	7370.79	$in^4$	$S_{bott.} = 347.12$	$in^3$		
$C_{top} =$	21.2344	in	A =	27.3633	$in^2$	$C_{top} =$	21.2344	in	A =	27.3633	$in^2$
$C_{bottom} =$	21.2344	in	$r_x =$	16.4124	in	$C_{bottom} =$	21.2344	in	$r_x =$	16.4124	in
J =	2.9702	$in^4$	Z =	407.67	$in^3$	Z =	407.67	$in^3$			



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		15.3633	4.0000	61.4531	0.1800	0.0000	0.0000	0.1800
2	Top Flange		6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange		6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>			<b>27.36</b>		<b>109.45</b>	<b>64.18</b>		<b>0.00</b>	<b>64.18</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	4.0000	in	S <sub>right</sub> =	16.05	in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> =	16.05	in <sup>3</sup>
I <sub>y</sub> =	64.18	in <sup>4</sup>	S <sub>left</sub> =	16.05	in <sup>3</sup>	I <sub>y</sub> =	64.18	in <sup>4</sup>	S <sub>left</sub> =	16.05	in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A =	27.3633	in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A =	27.3633	in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> =	1.5315	in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> =	1.5315	in

Non-composite Capacities*		
	AB	AI
M	#####	#####
V	167.98 k	167.98 k

\*Noncompact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

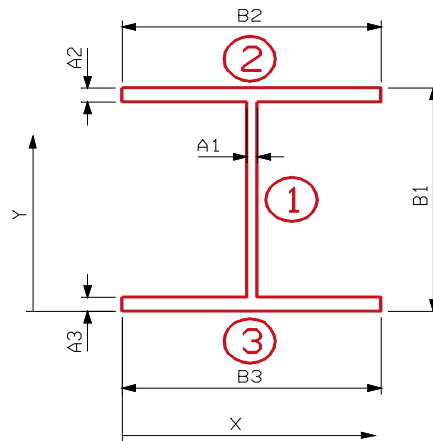
Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 41.0938$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in

$d_o = N/A$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F1-2 Avg Span 2**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		14.8477	20.5469	305.0729	1939.6793	0.0000	0.0000	1939.6793
2	Top Flange		6.0000	40.7188	244.3125	0.2813	20.1719	2441.4272	2441.7085
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	20.1719	2441.4272	2441.7085
<b>Total</b>			<b>26.85</b>		<b>551.64</b>	<b>1940.24</b>		<b>4882.85</b>	<b>6823.10</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	20.5469	in	S <sub>top</sub> =	332.07	in <sup>3</sup>	y-bar =	20.5469	in	S <sub>top</sub> =	332.07	in <sup>3</sup>
I <sub>x</sub> =	6823.10	in <sup>4</sup>	S <sub>bott.</sub> =	332.07	in <sup>3</sup>	I <sub>x</sub> =	6823.10	in <sup>4</sup>	S <sub>bott.</sub> =	332.07	in <sup>3</sup>
C <sub>top</sub> =	20.5469	in	A =	26.8477	in <sup>2</sup>	C <sub>top</sub> =	20.5469	in	A =	26.8477	in <sup>2</sup>
C <sub>bottom</sub> =	20.5469	in	r <sub>x</sub> =	15.9418	in	C <sub>bottom</sub> =	20.5469	in	r <sub>x</sub> =	15.9418	in
J =	2.9460	in <sup>4</sup>	Z =	389.03	in <sup>3</sup>	J =	2.9460	in <sup>4</sup>	Z =	389.03	in <sup>3</sup>



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Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		14.8477	4.0000	59.3906	0.1740	0.0000	0.0000	0.1740
2	Top Flange		6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange		6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>			<b>26.85</b>		<b>107.39</b>	<b>64.17</b>		<b>0.00</b>	<b>64.17</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	4.0000	in	S <sub>right</sub> =	16.04	in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> =	16.04	in <sup>3</sup>
I <sub>y</sub> =	64.17	in <sup>4</sup>	S <sub>left</sub> =	16.04	in <sup>3</sup>	I <sub>y</sub> =	64.17	in <sup>4</sup>	S <sub>left</sub> =	16.04	in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A =	26.8477	in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A =	26.8477	in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> =	1.5461	in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> =	1.5461	in

Non-composite Capacities*		
	AB	AI
M	996.22 k-ft	996.22 k-ft
V	173.81 k	173.81 k

\*Noncompact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear





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Job No. P402110046  
Sheet No. \_\_\_\_\_

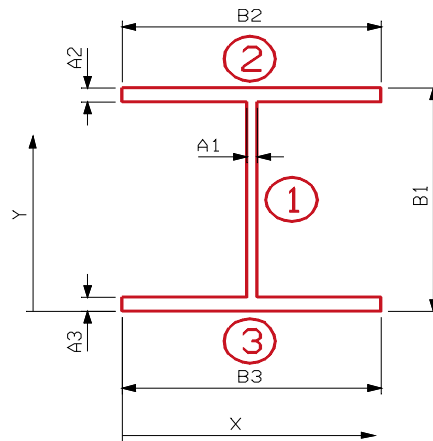
Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 39.7188$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in

$d_o = N/A$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F1-2 Avg Span 3**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		14.3320	19.8594	284.6252	1744.5341	0.0000	0.0000	1744.5341
2	Top Flange		6.0000	39.3438	236.0625	0.2813	19.4844	2277.8452	2278.1265
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	19.4844	2277.8452	2278.1265
<b>Total</b>			<b>26.33</b>		<b>522.94</b>	<b>1745.10</b>		<b>4555.69</b>	<b>6300.79</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	19.8594	in	$S_{top} = 317.27$	$in^3$	y-bar =	19.8594	in	$S_{top} = 317.27$	$in^3$		
$I_x =$	6300.79	$in^4$	$S_{bott.} = 317.27$	$in^3$	$I_x =$	6300.79	$in^4$	$S_{bott.} = 317.27$	$in^3$		
$C_{top} =$	19.8594	in	A =	26.3320	$in^2$	$C_{top} =$	19.8594	in	A =	26.3320	$in^2$
$C_{bottom} =$	19.8594	in	$r_x =$	15.4687	in	$C_{bottom} =$	19.8594	in	$r_x =$	15.4687	in
J =	2.9218	$in^4$	Z =	370.75	$in^3$	Z =	370.75	$in^3$			



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Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		14.3320	4.0000	57.3281	0.1680	0.0000	0.0000	0.1680
2	Top Flange		6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange		6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>			<b>26.33</b>		<b>105.33</b>	<b>64.17</b>		<b>0.00</b>	<b>64.17</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 16.04 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 16.04 in <sup>3</sup>
I <sub>y</sub> =	64.17	in <sup>4</sup>	S <sub>left</sub> = 16.04 in <sup>3</sup>	I <sub>y</sub> =	64.17	in <sup>4</sup>	S <sub>left</sub> = 16.04 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 26.3320 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 26.3320 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.5611 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.5611 in

Non-composite Capacities*		
	AB	AI
M	951.81 k-ft	951.81 k-ft
V	180.06 k	180.06 k

\*Noncompact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	14.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	15.0000 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

**Coped Stringer S3-2 @ FB H5**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	14.6675	99.4897	0.2500	7.3610	367.5345	367.7845
	Web	5.4648	7.4175	40.5353	87.1672	0.1110	0.0674	87.2346
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	7.0565	174.2786	174.3515
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.3065	111.2745	129.2745
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.8065	0.0000	0.0000
<b>Total</b>		<b>21.75</b>		<b>158.90</b>	<b>105.49</b>		<b>653.15</b>	<b>758.65</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	7.3065	in	S <sub>top</sub> =	98.61	in <sup>3</sup>	y-bar =	7.3065	in	S <sub>top</sub> =	98.61	in <sup>3</sup>
I <sub>x</sub> =	758.65	in <sup>4</sup>	S <sub>bott.</sub> =	103.83	in <sup>3</sup>	I <sub>x</sub> =	758.65	in <sup>4</sup>	S <sub>bott.</sub> =	103.83	in <sup>3</sup>
C <sub>top</sub> =	7.6935	in	A =	21.7478	in <sup>2</sup>	C <sub>top</sub> =	7.6935	in	A =	21.7478	in <sup>2</sup>
C <sub>bottom</sub> =	7.3065	in	r <sub>x</sub> =	5.9062	in	C <sub>bottom</sub> =	7.3065	in	r <sub>x</sub> =	5.9062	in
J =	2.0758	in <sup>4</sup>	Z =	116.15	in <sup>3</sup>	Z =	116.15	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		5.4648	4.1975	22.9386	0.0711	0.9025	4.4511	4.5222
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.75</b>		<b>91.29</b>	<b>62.58</b>		<b>39.88</b>	<b>102.46</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.1000	in	S <sub>right</sub> =	20.09	in <sup>3</sup>	x-bar =	5.1000	in	S <sub>right</sub> =	20.09	in <sup>3</sup>
I <sub>y</sub> =	102.46	in <sup>4</sup>	S <sub>left</sub> =	20.09	in <sup>3</sup>	I <sub>y</sub> =	102.46	in <sup>4</sup>	S <sub>left</sub> =	20.09	in <sup>3</sup>
C <sub>right</sub> =	5.1000	in	A =	21.7478	in <sup>2</sup>	C <sub>right</sub> =	5.1000	in	A =	21.7478	in <sup>2</sup>
C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1705	in	C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1705	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	348.45 k-ft	348.45 k-ft
V	228.95 k	228.95 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	14.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	H =	15.0000 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

**Coped Stringer S3-2 @ FB H6**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	14.6675	99.4897	0.2500	7.3610	367.5345	367.7845
	Web	5.4648	7.4175	40.5353	87.1672	0.1110	0.0674	87.2346
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	7.0565	174.2786	174.3515
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.3065	111.2745	129.2745
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.8065	0.0000	0.0000
<b>Total</b>		<b>21.75</b>		<b>158.90</b>	<b>105.49</b>		<b>653.15</b>	<b>758.65</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	7.3065	in	S <sub>top</sub> =	98.61	in <sup>3</sup>	y-bar =	7.3065	in	S <sub>top</sub> =	98.61	in <sup>3</sup>
I <sub>x</sub> =	758.65	in <sup>4</sup>	S <sub>bott.</sub> =	103.83	in <sup>3</sup>	I <sub>x</sub> =	758.65	in <sup>4</sup>	S <sub>bott.</sub> =	103.83	in <sup>3</sup>
C <sub>top</sub> =	7.6935	in	A =	21.7478	in <sup>2</sup>	C <sub>top</sub> =	7.6935	in	A =	21.7478	in <sup>2</sup>
C <sub>bottom</sub> =	7.3065	in	r <sub>x</sub> =	5.9062	in	C <sub>bottom</sub> =	7.3065	in	r <sub>x</sub> =	5.9062	in
J =	2.0758	in <sup>4</sup>	Z =	116.15	in <sup>3</sup>	Z =	116.15	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		5.4648	4.1975	22.9386	0.0711	0.9025	4.4511	4.5222
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.75</b>		<b>91.29</b>	<b>62.58</b>		<b>39.88</b>	<b>102.46</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.1000	in	S <sub>right</sub> =	20.09	in <sup>3</sup>	x-bar =	5.1000	in	S <sub>right</sub> =	20.09	in <sup>3</sup>
I <sub>y</sub> =	102.46	in <sup>4</sup>	S <sub>left</sub> =	20.09	in <sup>3</sup>	I <sub>y</sub> =	102.46	in <sup>4</sup>	S <sub>left</sub> =	20.09	in <sup>3</sup>
C <sub>right</sub> =	5.1000	in	A =	21.7478	in <sup>2</sup>	C <sub>right</sub> =	5.1000	in	A =	21.7478	in <sup>2</sup>
C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1705	in	C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1705	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	348.45 k-ft	348.45 k-ft
V	228.95 k	228.95 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	14.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	15.0000 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

Coped Stringer S3-2 @ FB H7

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	14.6675	99.4897	0.2500	7.3610	367.5345	367.7845
	Web	5.4648	7.4175	40.5353	87.1672	0.1110	0.0674	87.2346
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	7.0565	174.2786	174.3515
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.3065	111.2745	129.2745
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.8065	0.0000	0.0000
<b>Total</b>		<b>21.75</b>		<b>158.90</b>	<b>105.49</b>		<b>653.15</b>	<b>758.65</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	7.3065	in	S <sub>top</sub> =	98.61	in <sup>3</sup>	y-bar =	7.3065	in	S <sub>top</sub> =	98.61	in <sup>3</sup>
I <sub>x</sub> =	758.65	in <sup>4</sup>	S <sub>bott.</sub> =	103.83	in <sup>3</sup>	I <sub>x</sub> =	758.65	in <sup>4</sup>	S <sub>bott.</sub> =	103.83	in <sup>3</sup>
C <sub>top</sub> =	7.6935	in	A =	21.7478	in <sup>2</sup>	C <sub>top</sub> =	7.6935	in	A =	21.7478	in <sup>2</sup>
C <sub>bottom</sub> =	7.3065	in	r <sub>x</sub> =	5.9062	in	C <sub>bottom</sub> =	7.3065	in	r <sub>x</sub> =	5.9062	in
J =	2.0758	in <sup>4</sup>	Z =	116.15	in <sup>3</sup>	Z =	116.15	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		5.4648	4.1975	22.9386	0.0711	0.9025	4.4511	4.5222
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.75</b>		<b>91.29</b>	<b>62.58</b>		<b>39.88</b>	<b>102.46</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.1000	in	S <sub>right</sub> =	20.09	in <sup>3</sup>	x-bar =	5.1000	in	S <sub>right</sub> =	20.09	in <sup>3</sup>
I <sub>y</sub> =	102.46	in <sup>4</sup>	S <sub>left</sub> =	20.09	in <sup>3</sup>	I <sub>y</sub> =	102.46	in <sup>4</sup>	S <sub>left</sub> =	20.09	in <sup>3</sup>
C <sub>right</sub> =	5.1000	in	A =	21.7478	in <sup>2</sup>	C <sub>right</sub> =	5.1000	in	A =	21.7478	in <sup>2</sup>
C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1705	in	C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1705	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	348.45 k-ft	348.45 k-ft
V	228.95 k	228.95 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section





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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	14.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	15.0000 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

Coped Stringer S4-2 @ FB H4

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	14.6675	99.4897	0.2500	7.3610	367.5345	367.7845
	Web	5.4648	7.4175	40.5353	87.1672	0.1110	0.0674	87.2346
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	7.0565	174.2786	174.3515
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.3065	111.2745	129.2745
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.8065	0.0000	0.0000
<b>Total</b>		<b>21.75</b>		<b>158.90</b>	<b>105.49</b>		<b>653.15</b>	<b>758.65</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	7.3065	in	S <sub>top</sub> =	98.61	in <sup>3</sup>	y-bar =	7.3065	in	S <sub>top</sub> =	98.61	in <sup>3</sup>
I <sub>x</sub> =	758.65	in <sup>4</sup>	S <sub>bott.</sub> =	103.83	in <sup>3</sup>	I <sub>x</sub> =	758.65	in <sup>4</sup>	S <sub>bott.</sub> =	103.83	in <sup>3</sup>
C <sub>top</sub> =	7.6935	in	A =	21.7478	in <sup>2</sup>	C <sub>top</sub> =	7.6935	in	A =	21.7478	in <sup>2</sup>
C <sub>bottom</sub> =	7.3065	in	r <sub>x</sub> =	5.9062	in	C <sub>bottom</sub> =	7.3065	in	r <sub>x</sub> =	5.9062	in
J =	2.0758	in <sup>4</sup>	Z =	116.15	in <sup>3</sup>	Z =	116.15	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		5.4648	4.1975	22.9386	0.0711	0.9025	4.4511	4.5222
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.75</b>		<b>91.29</b>	<b>62.58</b>		<b>39.88</b>	<b>102.46</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.1000	in	S <sub>right</sub> =	20.09	in <sup>3</sup>	x-bar =	5.1000	in	S <sub>right</sub> =	20.09	in <sup>3</sup>
I <sub>y</sub> =	102.46	in <sup>4</sup>	S <sub>left</sub> =	20.09	in <sup>3</sup>	I <sub>y</sub> =	102.46	in <sup>4</sup>	S <sub>left</sub> =	20.09	in <sup>3</sup>
C <sub>right</sub> =	5.1000	in	A =	21.7478	in <sup>2</sup>	C <sub>right</sub> =	5.1000	in	A =	21.7478	in <sup>2</sup>
C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1705	in	C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1705	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	348.45 k-ft	348.45 k-ft
V	228.95 k	228.95 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	13.6250 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	14.1250 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

**Coped Stringer S4-2 @ FB H5**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	13.7925	93.5545	0.2500	6.8698	320.1156	320.3656
	Web	5.1192	6.9800	35.7320	71.6524	0.0573	0.0168	71.6692
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.6727	155.8384	155.9113
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.9227	92.3266	110.3266
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.4227	0.0000	0.0000
<b>Total</b>		<b>21.40</b>		<b>148.16</b>	<b>89.98</b>		<b>568.30</b>	<b>658.27</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.9227 in	S <sub>top</sub> =	91.40 in <sup>3</sup>	y-bar =	6.9227 in	S <sub>top</sub> =	91.40 in <sup>3</sup>
I <sub>x</sub> =	658.27 in <sup>4</sup>	S <sub>bott.</sub> =	95.09 in <sup>3</sup>	I <sub>x</sub> =	658.27 in <sup>4</sup>	S <sub>bott.</sub> =	95.09 in <sup>3</sup>
C <sub>top</sub> =	7.2023 in	A =	21.4022 in <sup>2</sup>	C <sub>top</sub> =	7.2023 in	A =	21.4022 in <sup>2</sup>
C <sub>bottom</sub> =	6.9227 in	r <sub>x</sub> =	5.5459 in	C <sub>bottom</sub> =	6.9227 in	r <sub>x</sub> =	5.5459 in
J =	2.0578 in <sup>4</sup>	Z =	107.27 in <sup>3</sup>	Z =	107.27 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		5.1192	4.1975	21.4878	0.0666	0.9025	4.1696	4.2362
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.40</b>		<b>89.84</b>	<b>62.57</b>		<b>39.60</b>	<b>102.17</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.1000 in	S <sub>right</sub> =	20.03 in <sup>3</sup>	x-bar =	5.1000 in	S <sub>right</sub> =	20.03 in <sup>3</sup>
I <sub>y</sub> =	102.17 in <sup>4</sup>	S <sub>left</sub> =	20.03 in <sup>3</sup>	I <sub>y</sub> =	102.17 in <sup>4</sup>	S <sub>left</sub> =	20.03 in <sup>3</sup>
C <sub>right</sub> =	5.1000 in	A =	21.4022 in <sup>2</sup>	C <sub>right</sub> =	5.1000 in	A =	21.4022 in <sup>2</sup>
C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.1849 in	C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.1849 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	321.81 k-ft	321.81 k-ft
V	221.73 k	221.73 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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Date 3/19/2012  
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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	12.8750 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	H =	13.3750 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

**Coped Stringer S4-2 @ FB H6**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	13.0425	88.4673	0.2500	6.4473	281.9540	282.2039
	Web	4.8230	6.6050	31.8556	59.9188	0.0098	0.0005	59.9192
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.3452	140.9153	140.9882
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.5952	77.5526	95.5526
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.0952	0.0000	0.0000
<b>Total</b>		<b>21.11</b>		<b>139.20</b>	<b>78.24</b>		<b>500.42</b>	<b>578.66</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.5952 in	S <sub>top</sub> =	85.35 in <sup>3</sup>	y-bar =	6.5952 in	S <sub>top</sub> =	85.35 in <sup>3</sup>
I <sub>x</sub> =	578.66 in <sup>4</sup>	S <sub>bott.</sub> =	87.74 in <sup>3</sup>	I <sub>x</sub> =	578.66 in <sup>4</sup>	S <sub>bott.</sub> =	87.74 in <sup>3</sup>
C <sub>top</sub> =	6.7798 in	A =	21.1060 in <sup>2</sup>	C <sub>top</sub> =	6.7798 in	A =	21.1060 in <sup>2</sup>
C <sub>bottom</sub> =	6.5952 in	r <sub>x</sub> =	5.2361 in	C <sub>bottom</sub> =	6.5952 in	r <sub>x</sub> =	5.2361 in
J =	2.0424 in <sup>4</sup>	Z =	99.86 in <sup>3</sup>	Z =	<b>99.86</b> in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		4.8230	4.1975	20.2443	0.0627	0.9025	3.9283	3.9910
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.11</b>		<b>88.59</b>	<b>62.57</b>		<b>39.36</b>	<b>101.93</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	<b>0.0000</b>	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	<b>0.0000</b>	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	<b>0.0000</b>	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	<b>0.0000</b>	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	<b>0.0000</b>	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	<b>0.0000</b>	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	<b>0.0000</b>	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	<b>0.0000</b>	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.1000 in	S <sub>right</sub> =	19.99 in <sup>3</sup>	x-bar =	5.1000 in	S <sub>right</sub> =	19.99 in <sup>3</sup>
I <sub>y</sub> =	101.93 in <sup>4</sup>	S <sub>left</sub> =	19.99 in <sup>3</sup>	I <sub>y</sub> =	101.93 in <sup>4</sup>	S <sub>left</sub> =	19.99 in <sup>3</sup>
C <sub>right</sub> =	5.1000 in	A =	21.1060 in <sup>2</sup>	C <sub>right</sub> =	5.1000 in	A =	21.1060 in <sup>2</sup>
C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.1976 in	C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.1976 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
<b>M</b>	299.58 k-ft	299.58 k-ft
<b>V</b>	215.54 k	215.54 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	12.7500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	H =	13.2500 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

Coped Stringer S4-2 @ FB H7

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	12.9175	87.6194	0.2500	6.3768	275.8179	276.0678
	Web	4.7736	6.5425	31.2311	58.0973	0.0018	0.0000	58.0973
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.2907	138.5068	138.5797
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.5407	75.2209	93.2209
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.0407	0.0000	0.0000
<b>Total</b>		<b>21.06</b>		<b>137.73</b>	<b>76.42</b>		<b>489.55</b>	<b>565.97</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.5407 in	S <sub>top</sub> =	84.36 in <sup>3</sup>	y-bar =	6.5407 in	S <sub>top</sub> =	84.36 in <sup>3</sup>
I <sub>x</sub> =	565.97 in <sup>4</sup>	S <sub>bott.</sub> =	86.53 in <sup>3</sup>	I <sub>x</sub> =	565.97 in <sup>4</sup>	S <sub>bott.</sub> =	86.53 in <sup>3</sup>
C <sub>top</sub> =	6.7093 in	A =	21.0566 in <sup>2</sup>	C <sub>top</sub> =	6.7093 in	A =	21.0566 in <sup>2</sup>
C <sub>bottom</sub> =	6.5407 in	r <sub>x</sub> =	5.1844 in	C <sub>bottom</sub> =	6.5407 in	r <sub>x</sub> =	5.1844 in
J =	2.0398 in <sup>4</sup>	Z =	98.65 in <sup>3</sup>	Z =	98.65 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		4.7736	4.1975	20.0371	0.0621	0.9025	3.8881	3.9502
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.06</b>		<b>88.38</b>	<b>62.57</b>		<b>39.32</b>	<b>101.89</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.1000 in	S <sub>right</sub> =	19.98 in <sup>3</sup>	x-bar =	5.1000 in	S <sub>right</sub> =	19.98 in <sup>3</sup>
I <sub>y</sub> =	101.89 in <sup>4</sup>	S <sub>left</sub> =	19.98 in <sup>3</sup>	I <sub>y</sub> =	101.89 in <sup>4</sup>	S <sub>left</sub> =	19.98 in <sup>3</sup>
C <sub>right</sub> =	5.1000 in	A =	21.0566 in <sup>2</sup>	C <sub>right</sub> =	5.1000 in	A =	21.0566 in <sup>2</sup>
C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.1997 in	C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.1997 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	295.95 k-ft	295.95 k-ft
V	214.51 k	214.51 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section





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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	14.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	15.0000 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

Coped Stringer S5-2 @ FB H4

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	14.6675	99.4897	0.2500	7.3610	367.5345	367.7845
	Web	5.4648	7.4175	40.5353	87.1672	0.1110	0.0674	87.2346
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	7.0565	174.2786	174.3515
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.3065	111.2745	129.2745
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.8065	0.0000	0.0000
<b>Total</b>		<b>21.75</b>		<b>158.90</b>	<b>105.49</b>		<b>653.15</b>	<b>758.65</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	7.3065	in	S <sub>top</sub> =	98.61	in <sup>3</sup>	y-bar =	7.3065	in	S <sub>top</sub> =	98.61	in <sup>3</sup>
I <sub>x</sub> =	758.65	in <sup>4</sup>	S <sub>bott.</sub> =	103.83	in <sup>3</sup>	I <sub>x</sub> =	758.65	in <sup>4</sup>	S <sub>bott.</sub> =	103.83	in <sup>3</sup>
C <sub>top</sub> =	7.6935	in	A =	21.7478	in <sup>2</sup>	C <sub>top</sub> =	7.6935	in	A =	21.7478	in <sup>2</sup>
C <sub>bottom</sub> =	7.3065	in	r <sub>x</sub> =	5.9062	in	C <sub>bottom</sub> =	7.3065	in	r <sub>x</sub> =	5.9062	in
J =	2.0758	in <sup>4</sup>	Z =	116.15	in <sup>3</sup>	Z =	116.15	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		5.4648	4.1975	22.9386	0.0711	0.9025	4.4511	4.5222
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.75</b>		<b>91.29</b>	<b>62.58</b>		<b>39.88</b>	<b>102.46</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.1000	in	S <sub>right</sub> =	20.09	in <sup>3</sup>	x-bar =	5.1000	in	S <sub>right</sub> =	20.09	in <sup>3</sup>
I <sub>y</sub> =	102.46	in <sup>4</sup>	S <sub>left</sub> =	20.09	in <sup>3</sup>	I <sub>y</sub> =	102.46	in <sup>4</sup>	S <sub>left</sub> =	20.09	in <sup>3</sup>
C <sub>right</sub> =	5.1000	in	A =	21.7478	in <sup>2</sup>	C <sub>right</sub> =	5.1000	in	A =	21.7478	in <sup>2</sup>
C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1705	in	C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1705	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	348.45 k-ft	348.45 k-ft
V	228.95 k	228.95 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	13.6250 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	14.1250 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

**Coped Stringer S5-2 @ FB H5**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	13.7925	93.5545	0.2500	6.8698	320.1156	320.3656
	Web	5.1192	6.9800	35.7320	71.6524	0.0573	0.0168	71.6692
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.6727	155.8384	155.9113
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.9227	92.3266	110.3266
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.4227	0.0000	0.0000
<b>Total</b>		<b>21.40</b>		<b>148.16</b>	<b>89.98</b>		<b>568.30</b>	<b>658.27</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.9227	in	S <sub>top</sub> = 91.40 in <sup>3</sup>	y-bar =	6.9227	in	S <sub>top</sub> = 91.40 in <sup>3</sup>
I <sub>x</sub> =	658.27	in <sup>4</sup>	S <sub>bott.</sub> = 95.09 in <sup>3</sup>	I <sub>x</sub> =	658.27	in <sup>4</sup>	S <sub>bott.</sub> = 95.09 in <sup>3</sup>
C <sub>top</sub> =	7.2023	in	A = 21.4022 in <sup>2</sup>	C <sub>top</sub> =	7.2023	in	A = 21.4022 in <sup>2</sup>
C <sub>bottom</sub> =	6.9227	in	r <sub>x</sub> = 5.5459 in	C <sub>bottom</sub> =	6.9227	in	r <sub>x</sub> = 5.5459 in
J =	2.0578	in <sup>4</sup>	Z = 107.27 in <sup>3</sup>	Z =	107.27	in <sup>3</sup>	

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		5.1192	4.1975	21.4878	0.0666	0.9025	4.1696	4.2362
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.40</b>		<b>89.84</b>	<b>62.57</b>		<b>39.60</b>	<b>102.17</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.1000	in	S <sub>right</sub> = 20.03 in <sup>3</sup>	x-bar =	5.1000	in	S <sub>right</sub> = 20.03 in <sup>3</sup>
I <sub>y</sub> =	102.17	in <sup>4</sup>	S <sub>left</sub> = 20.03 in <sup>3</sup>	I <sub>y</sub> =	102.17	in <sup>4</sup>	S <sub>left</sub> = 20.03 in <sup>3</sup>
C <sub>right</sub> =	5.1000	in	A = 21.4022 in <sup>2</sup>	C <sub>right</sub> =	5.1000	in	A = 21.4022 in <sup>2</sup>
C <sub>left</sub> =	5.1000	in	r <sub>y</sub> = 2.1849 in	C <sub>left</sub> =	5.1000	in	r <sub>y</sub> = 2.1849 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	321.81 k-ft	321.81 k-ft
V	221.73 k	221.73 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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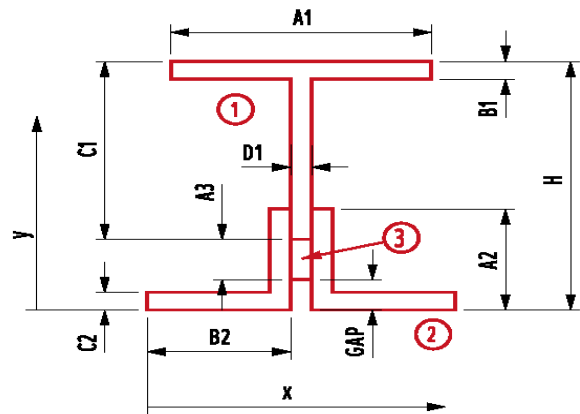
Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	12.8750 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	13.3750 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

**Coped Stringer S5-2 @ FB H6**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	13.0425	88.4673	0.2500	6.4473	281.9540	282.2039
	Web	4.8230	6.6050	31.8556	59.9188	0.0098	0.0005	59.9192
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.3452	140.9153	140.9882
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.5952	77.5526	95.5526
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.0952	0.0000	0.0000
<b>Total</b>		<b>21.11</b>		<b>139.20</b>	<b>78.24</b>		<b>500.42</b>	<b>578.66</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.5952 in	S <sub>top</sub> =	85.35 in <sup>3</sup>	y-bar =	6.5952 in	S <sub>top</sub> =	85.35 in <sup>3</sup>
I <sub>x</sub> =	578.66 in <sup>4</sup>	S <sub>bott.</sub> =	87.74 in <sup>3</sup>	I <sub>x</sub> =	578.66 in <sup>4</sup>	S <sub>bott.</sub> =	87.74 in <sup>3</sup>
C <sub>top</sub> =	6.7798 in	A =	21.1060 in <sup>2</sup>	C <sub>top</sub> =	6.7798 in	A =	21.1060 in <sup>2</sup>
C <sub>bottom</sub> =	6.5952 in	r <sub>x</sub> =	5.2361 in	C <sub>bottom</sub> =	6.5952 in	r <sub>x</sub> =	5.2361 in
J =	2.0424 in <sup>4</sup>	Z =	99.86 in <sup>3</sup>	Z =	99.86 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		4.8230	4.1975	20.2443	0.0627	0.9025	3.9283	3.9910
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.11</b>		<b>88.59</b>	<b>62.57</b>		<b>39.36</b>	<b>101.93</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.1000 in	S <sub>right</sub> =	19.99 in <sup>3</sup>	x-bar =	5.1000 in	S <sub>right</sub> =	19.99 in <sup>3</sup>
I <sub>y</sub> =	101.93 in <sup>4</sup>	S <sub>left</sub> =	19.99 in <sup>3</sup>	I <sub>y</sub> =	101.93 in <sup>4</sup>	S <sub>left</sub> =	19.99 in <sup>3</sup>
C <sub>right</sub> =	5.1000 in	A =	21.1060 in <sup>2</sup>	C <sub>right</sub> =	5.1000 in	A =	21.1060 in <sup>2</sup>
C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.1976 in	C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.1976 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	299.58 k-ft	299.58 k-ft
V	215.54 k	215.54 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	13.2500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	H =	13.7500 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

Coped Stringer S5-2 @ FB H7

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	13.4175	91.0109	0.2500	6.6587	300.7471	300.9970
	Web	4.9711	6.7925	33.7660	65.6108	0.0337	0.0056	65.6165
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.5088	148.2754	148.3483
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.7588	84.7712	102.7712
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.2588	0.0000	0.0000
<b>Total</b>		<b>21.25</b>		<b>143.65</b>	<b>83.93</b>		<b>533.80</b>	<b>617.73</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	6.7588	in	S <sub>top</sub> =	88.36	in <sup>3</sup>	y-bar =	6.7588	in	S <sub>top</sub> =	88.36	in <sup>3</sup>
I <sub>x</sub> =	617.73	in <sup>4</sup>	S <sub>bott.</sub> =	91.40	in <sup>3</sup>	I <sub>x</sub> =	617.73	in <sup>4</sup>	S <sub>bott.</sub> =	91.40	in <sup>3</sup>
C <sub>top</sub> =	6.9912	in	A =	21.2541	in <sup>2</sup>	C <sub>top</sub> =	6.9912	in	A =	21.2541	in <sup>2</sup>
C <sub>bottom</sub> =	6.7588	in	r <sub>x</sub> =	5.3911	in	C <sub>bottom</sub> =	6.7588	in	r <sub>x</sub> =	5.3911	in
J =	2.0501	in <sup>4</sup>	Z =	103.54	in <sup>3</sup>	Z =	103.54	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		4.9711	4.1975	20.8661	0.0646	0.9025	4.0490	4.1136
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.25</b>		<b>89.21</b>	<b>62.57</b>		<b>39.48</b>	<b>102.05</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.1000	in	S <sub>right</sub> =	20.01	in <sup>3</sup>	x-bar =	5.1000	in	S <sub>right</sub> =	20.01	in <sup>3</sup>
I <sub>y</sub> =	102.05	in <sup>4</sup>	S <sub>left</sub> =	20.01	in <sup>3</sup>	I <sub>y</sub> =	102.05	in <sup>4</sup>	S <sub>left</sub> =	20.01	in <sup>3</sup>
C <sub>right</sub> =	5.1000	in	A =	21.2541	in <sup>2</sup>	C <sub>right</sub> =	5.1000	in	A =	21.2541	in <sup>2</sup>
C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1912	in	C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1912	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	310.62 k-ft	310.62 k-ft
V	218.64 k	218.64 k

F<sub>y</sub> = 36.00 ksi

\*Compact Section





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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	14.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	H =	14.9375 in
$B_3 = t =$	0.3950 in	Gap =	0.4375 in

**Coped Stringer S6-2 @ FB H4**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	14.6050	99.0657	0.2500	7.3337	364.8132	365.0632
	Web	5.4648	7.3550	40.1938	87.1672	0.0837	0.0383	87.2056
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	7.0213	172.5443	172.6172
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.2713	109.4629	127.4629
3	Additional Plate	0.0000	0.4375	0.0000	0.0000	6.8338	0.0000	0.0000
<b>Total</b>		<b>21.75</b>		<b>158.13</b>	<b>105.49</b>		<b>646.86</b>	<b>752.35</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	7.2713	in	S <sub>top</sub> =	98.14	in <sup>3</sup>	y-bar =	7.2713	in	S <sub>top</sub> =	98.14	in <sup>3</sup>
I <sub>x</sub> =	752.35	in <sup>4</sup>	S <sub>bott.</sub> =	103.47	in <sup>3</sup>	I <sub>x</sub> =	752.35	in <sup>4</sup>	S <sub>bott.</sub> =	103.47	in <sup>3</sup>
C <sub>top</sub> =	7.6662	in	A =	21.7478	in <sup>2</sup>	C <sub>top</sub> =	7.6662	in	A =	21.7478	in <sup>2</sup>
C <sub>bottom</sub> =	7.2713	in	r <sub>x</sub> =	5.8817	in	C <sub>bottom</sub> =	7.2713	in	r <sub>x</sub> =	5.8817	in
J =	2.0758	in <sup>4</sup>	Z =	115.63	in <sup>3</sup>	Z =	115.63	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		5.4648	4.1975	22.9386	0.0711	0.9025	4.4511	4.5222
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.75</b>		<b>91.29</b>	<b>62.58</b>		<b>39.88</b>	<b>102.46</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.1000	in	S <sub>right</sub> =	20.09	in <sup>3</sup>	x-bar =	5.1000	in	S <sub>right</sub> =	20.09	in <sup>3</sup>
I <sub>y</sub> =	102.46	in <sup>4</sup>	S <sub>left</sub> =	20.09	in <sup>3</sup>	I <sub>y</sub> =	102.46	in <sup>4</sup>	S <sub>left</sub> =	20.09	in <sup>3</sup>
C <sub>right</sub> =	5.1000	in	A =	21.7478	in <sup>2</sup>	C <sub>right</sub> =	5.1000	in	A =	21.7478	in <sup>2</sup>
C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1705	in	C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1705	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	346.89 k-ft	346.89 k-ft
V	228.95 k	228.95 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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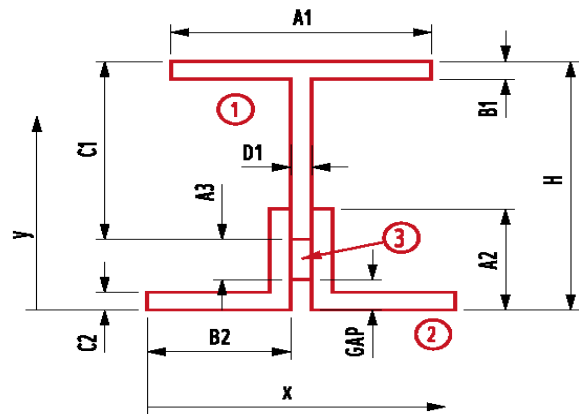
Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	13.7500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	H =	14.2500 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

**Coped Stringer S6-2 @ FB H5**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	13.9175	94.4024	0.2500	6.9401	326.6993	326.9493
	Web	5.1686	7.0425	36.3997	73.7458	0.0651	0.0219	73.7676
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.7274	158.4046	158.4775
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.9774	94.9202	112.9202
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.4774	0.0000	0.0000
<b>Total</b>		<b>21.45</b>		<b>149.68</b>	<b>92.07</b>		<b>580.05</b>	<b>672.11</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.9774 in	S <sub>top</sub> =	92.42 in <sup>3</sup>	y-bar =	6.9774 in	S <sub>top</sub> =	92.42 in <sup>3</sup>
I <sub>x</sub> =	672.11 in <sup>4</sup>	S <sub>bott.</sub> =	96.33 in <sup>3</sup>	I <sub>x</sub> =	672.11 in <sup>4</sup>	S <sub>bott.</sub> =	96.33 in <sup>3</sup>
C <sub>top</sub> =	7.2726 in	A =	21.4516 in <sup>2</sup>	C <sub>top</sub> =	7.2726 in	A =	21.4516 in <sup>2</sup>
C <sub>bottom</sub> =	6.9774 in	r <sub>x</sub> =	5.5975 in	C <sub>bottom</sub> =	6.9774 in	r <sub>x</sub> =	5.5975 in
J =	2.0603 in <sup>4</sup>	Z =	108.52 in <sup>3</sup>			Z =	108.52 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		5.1686	4.1975	21.6951	0.0672	0.9025	4.2098	4.2770
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.45</b>		<b>90.04</b>	<b>62.57</b>		<b>39.64</b>	<b>102.21</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.1000 in	S <sub>right</sub> =	20.04 in <sup>3</sup>	x-bar =	5.1000 in	S <sub>right</sub> =	20.04 in <sup>3</sup>
I <sub>y</sub> =	102.21 in <sup>4</sup>	S <sub>left</sub> =	20.04 in <sup>3</sup>	I <sub>y</sub> =	102.21 in <sup>4</sup>	S <sub>left</sub> =	20.04 in <sup>3</sup>
C <sub>right</sub> =	5.1000 in	A =	21.4516 in <sup>2</sup>	C <sub>right</sub> =	5.1000 in	A =	21.4516 in <sup>2</sup>
C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.1829 in	C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.1829 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	325.56 k-ft	325.56 k-ft
V	222.76 k	222.76 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	13.3750 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	13.8750 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

**Coped Stringer S6-2 @ FB H6**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	13.5425	91.8588	0.2500	6.7291	307.1394	307.3894
	Web	5.0205	6.8550	34.4152	67.5853	0.0416	0.0087	67.5940
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.5634	150.7738	150.8468
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.8134	87.2522	105.2522
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.3134	0.0000	0.0000
<b>Total</b>		<b>21.30</b>		<b>145.15</b>	<b>85.91</b>		<b>545.17</b>	<b>631.08</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	6.8134	in	S <sub>top</sub> =	89.37	in <sup>3</sup>	y-bar =	6.8134	in	S <sub>top</sub> =	89.37	in <sup>3</sup>
I <sub>x</sub> =	631.08	in <sup>4</sup>	S <sub>bott.</sub> =	92.62	in <sup>3</sup>	I <sub>x</sub> =	631.08	in <sup>4</sup>	S <sub>bott.</sub> =	92.62	in <sup>3</sup>
C <sub>top</sub> =	7.0616	in	A =	21.3035	in <sup>2</sup>	C <sub>top</sub> =	7.0616	in	A =	21.3035	in <sup>2</sup>
C <sub>bottom</sub> =	6.8134	in	r <sub>x</sub> =	5.4427	in	C <sub>bottom</sub> =	6.8134	in	r <sub>x</sub> =	5.4427	in
J =	2.0526	in <sup>4</sup>	Z =	104.78	in <sup>3</sup>	Z =	104.78	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		5.0205	4.1975	21.0733	0.0653	0.9025	4.0892	4.1545
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.30</b>		<b>89.42</b>	<b>62.57</b>		<b>39.52</b>	<b>102.09</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.1000	in	S <sub>right</sub> =	20.02	in <sup>3</sup>	x-bar =	5.1000	in	S <sub>right</sub> =	20.02	in <sup>3</sup>
I <sub>y</sub> =	102.09	in <sup>4</sup>	S <sub>left</sub> =	20.02	in <sup>3</sup>	I <sub>y</sub> =	102.09	in <sup>4</sup>	S <sub>left</sub> =	20.02	in <sup>3</sup>
C <sub>right</sub> =	5.1000	in	A =	21.3035	in <sup>2</sup>	C <sub>right</sub> =	5.1000	in	A =	21.3035	in <sup>2</sup>
C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1891	in	C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1891	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	314.34 k-ft	314.34 k-ft
V	219.67 k	219.67 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	13.6250 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	14.1250 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

Coped Stringer S6-2 @ FB H7

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	13.7925	93.5545	0.2500	6.8698	320.1156	320.3656
	Web	5.1192	6.9800	35.7320	71.6524	0.0573	0.0168	71.6692
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.6727	155.8384	155.9113
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.9227	92.3266	110.3266
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.4227	0.0000	0.0000
<b>Total</b>		<b>21.40</b>		<b>148.16</b>	<b>89.98</b>		<b>568.30</b>	<b>658.27</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	6.9227	in	S <sub>top</sub> =	91.40	in <sup>3</sup>	y-bar =	6.9227	in	S <sub>top</sub> =	91.40	in <sup>3</sup>
I <sub>x</sub> =	658.27	in <sup>4</sup>	S <sub>bott.</sub> =	95.09	in <sup>3</sup>	I <sub>x</sub> =	658.27	in <sup>4</sup>	S <sub>bott.</sub> =	95.09	in <sup>3</sup>
C <sub>top</sub> =	7.2023	in	A =	21.4022	in <sup>2</sup>	C <sub>top</sub> =	7.2023	in	A =	21.4022	in <sup>2</sup>
C <sub>bottom</sub> =	6.9227	in	r <sub>x</sub> =	5.5459	in	C <sub>bottom</sub> =	6.9227	in	r <sub>x</sub> =	5.5459	in
J =	2.0578	in <sup>4</sup>	Z =	107.27	in <sup>3</sup>	Z =	107.27	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		5.1192	4.1975	21.4878	0.0666	0.9025	4.1696	4.2362
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.40</b>		<b>89.84</b>	<b>62.57</b>		<b>39.60</b>	<b>102.17</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.1000	in	S <sub>right</sub> =	20.03	in <sup>3</sup>	x-bar =	5.1000	in	S <sub>right</sub> =	20.03	in <sup>3</sup>
I <sub>y</sub> =	102.17	in <sup>4</sup>	S <sub>left</sub> =	20.03	in <sup>3</sup>	I <sub>y</sub> =	102.17	in <sup>4</sup>	S <sub>left</sub> =	20.03	in <sup>3</sup>
C <sub>right</sub> =	5.1000	in	A =	21.4022	in <sup>2</sup>	C <sub>right</sub> =	5.1000	in	A =	21.4022	in <sup>2</sup>
C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1849	in	C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1849	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	321.81 k-ft	321.81 k-ft
V	221.73 k	221.73 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





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Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	11.6875 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	12.1875 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

**Coped Stringer S7-2 @ FB H4**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	11.8550	80.4125	0.2500	5.7756	226.2648	226.5147
	Web	4.3539	6.0113	26.1723	44.0815	0.0681	0.0202	44.1017
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.8294	118.9364	119.0093
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.0794	56.8960	74.8960
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.5794	0.0000	0.0000
<b>Total</b>		<b>20.64</b>		<b>125.46</b>	<b>62.40</b>		<b>402.12</b>	<b>464.52</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.0794 in	S <sub>top</sub> =	76.05 in <sup>3</sup>	y-bar =	6.0794 in	S <sub>top</sub> =	76.05 in <sup>3</sup>
I <sub>x</sub> =	464.52 in <sup>4</sup>	S <sub>bott.</sub> =	76.41 in <sup>3</sup>	I <sub>x</sub> =	464.52 in <sup>4</sup>	S <sub>bott.</sub> =	76.41 in <sup>3</sup>
C <sub>top</sub> =	6.1081 in	A =	20.6369 in <sup>2</sup>	C <sub>top</sub> =	6.1081 in	A =	20.6369 in <sup>2</sup>
C <sub>bottom</sub> =	6.0794 in	r <sub>x</sub> =	4.7444 in	C <sub>bottom</sub> =	6.0794 in	r <sub>x</sub> =	4.7444 in
J =	2.0180 in <sup>4</sup>	Z =	88.52 in <sup>3</sup>	Z =	88.52 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		4.3539	4.1975	18.2754	0.0566	0.9025	3.5463	3.6029
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>20.64</b>		<b>86.62</b>	<b>62.56</b>		<b>38.98</b>	<b>101.54</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.1000 in	S <sub>right</sub> =	19.91 in <sup>3</sup>	x-bar =	5.1000 in	S <sub>right</sub> =	19.91 in <sup>3</sup>
I <sub>y</sub> =	101.54 in <sup>4</sup>	S <sub>left</sub> =	19.91 in <sup>3</sup>	I <sub>y</sub> =	101.54 in <sup>4</sup>	S <sub>left</sub> =	19.91 in <sup>3</sup>
C <sub>right</sub> =	5.1000 in	A =	20.6369 in <sup>2</sup>	C <sub>right</sub> =	5.1000 in	A =	20.6369 in <sup>2</sup>
C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.2182 in	C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.2182 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
<b>M</b>	265.56 k-ft	265.56 k-ft
<b>V</b>	205.75 k	205.75 k

<b>F<sub>y</sub> =</b>	<b>36.00 ksi</b>
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\*Compact Section



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	11.1875 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	11.6875 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

**Coped Stringer S7-2 @ FB H5**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	11.3550	77.0210	0.2500	5.4917	204.5681	204.8180
	Web	4.1564	5.7613	23.9460	38.3506	0.1020	0.0433	38.3939
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.6133	110.2814	110.3543
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	2.8633	49.1904	67.1904
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.3633	0.0000	0.0000
<b>Total</b>		<b>20.44</b>		<b>119.84</b>	<b>56.67</b>		<b>364.08</b>	<b>420.76</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	5.8633	in	S <sub>top</sub> =	72.24	in <sup>3</sup>	y-bar =	5.8633	in	S <sub>top</sub> =	72.24	in <sup>3</sup>
I <sub>x</sub> =	420.76	in <sup>4</sup>	S <sub>bott.</sub> =	71.76	in <sup>3</sup>	I <sub>x</sub> =	420.76	in <sup>4</sup>	S <sub>bott.</sub> =	71.76	in <sup>3</sup>
C <sub>top</sub> =	5.8242	in	A =	20.4394	in <sup>2</sup>	C <sub>top</sub> =	5.8242	in	A =	20.4394	in <sup>2</sup>
C <sub>bottom</sub> =	5.8633	in	r <sub>x</sub> =	4.5371	in	C <sub>bottom</sub> =	5.8633	in	r <sub>x</sub> =	4.5371	in
J =	2.0077	in <sup>4</sup>	Z =	83.89	in <sup>3</sup>	Z =	83.89	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web	4.1564	4.1975	17.4464	0.0540	0.9025	3.3854	3.4394
2 (Left)	Horizontal Leg	1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg	3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg	1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg	3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate	0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>		<b>20.44</b>		<b>85.79</b>	<b>62.56</b>		<b>38.82</b>	<b>101.38</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.1000	in	S <sub>right</sub> =	19.88	in <sup>3</sup>	x-bar =	5.1000	in	S <sub>right</sub> =	19.88	in <sup>3</sup>
I <sub>y</sub> =	101.38	in <sup>4</sup>	S <sub>left</sub> =	19.88	in <sup>3</sup>	I <sub>y</sub> =	101.38	in <sup>4</sup>	S <sub>left</sub> =	19.88	in <sup>3</sup>
C <sub>right</sub> =	5.1000	in	A =	20.4394	in <sup>2</sup>	C <sub>right</sub> =	5.1000	in	A =	20.4394	in <sup>2</sup>
C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.2271	in	C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.2271	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	251.67 k-ft	251.67 k-ft
V	201.63 k	201.63 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	11.0625 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	11.5625 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

**Coped Stringer S7-2 @ FB H6**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	11.2300	76.1731	0.2500	5.4206	199.3072	199.5571
	Web	4.1070	5.6988	23.4048	37.0001	0.1106	0.0502	37.0503
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.5594	108.1727	108.2456
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	2.8094	47.3550	65.3550
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.3094	0.0000	0.0000
<b>Total</b>		<b>20.39</b>		<b>118.45</b>	<b>55.32</b>		<b>354.89</b>	<b>410.21</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	5.8094	in	S <sub>top</sub> =	71.30	in <sup>3</sup>	y-bar =	5.8094	in	S <sub>top</sub> =	71.30	in <sup>3</sup>
I <sub>x</sub> =	410.21	in <sup>4</sup>	S <sub>bott.</sub> =	70.61	in <sup>3</sup>	I <sub>x</sub> =	410.21	in <sup>4</sup>	S <sub>bott.</sub> =	70.61	in <sup>3</sup>
C <sub>top</sub> =	5.7531	in	A =	20.3900	in <sup>2</sup>	C <sub>top</sub> =	5.7531	in	A =	20.3900	in <sup>2</sup>
C <sub>bottom</sub> =	5.8094	in	r <sub>x</sub> =	4.4853	in	C <sub>bottom</sub> =	5.8094	in	r <sub>x</sub> =	4.4853	in
J =	2.0051	in <sup>4</sup>	Z =	82.75	in <sup>3</sup>	Z =	82.75	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		4.1070	4.1975	17.2392	0.0534	0.9025	3.3452	3.3986
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>20.39</b>		<b>85.59</b>	<b>62.56</b>		<b>38.78</b>	<b>101.34</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.1000	in	S <sub>right</sub> =	19.87	in <sup>3</sup>	x-bar =	5.1000	in	S <sub>right</sub> =	19.87	in <sup>3</sup>
I <sub>y</sub> =	101.34	n <sup>4</sup>	S <sub>left</sub> =	19.87	in <sup>3</sup>	I <sub>y</sub> =	101.34	n <sup>4</sup>	S <sub>left</sub> =	19.87	in <sup>3</sup>
C <sub>right</sub> =	5.1000	in	A =	20.3900	in <sup>2</sup>	C <sub>right</sub> =	5.1000	in	A =	20.3900	in <sup>2</sup>
C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.2293	in	C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.2293	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	248.25 k-ft	248.25 k-ft
V	200.59 k	200.59 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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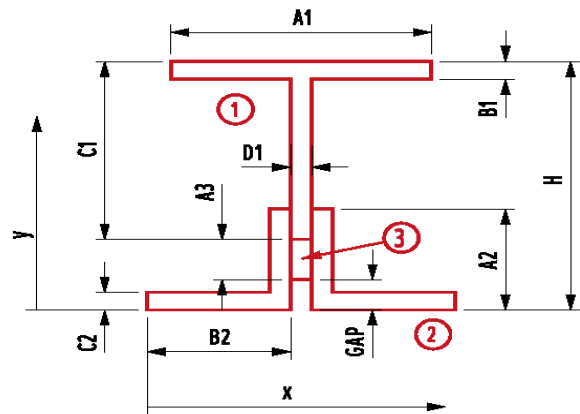
Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	11.5625 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	12.0625 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

Coped Stringer S7-2 @ FB H7

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	11.7300	79.5646	0.2500	5.7047	220.7428	220.9928
	Web	4.3045	5.9488	25.6065	42.5987	0.0766	0.0252	42.6239
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.7753	116.7396	116.8125
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.0253	54.9149	72.9149
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.5253	0.0000	0.0000
<b>Total</b>		<b>20.59</b>		<b>124.05</b>	<b>60.92</b>		<b>392.42</b>	<b>453.34</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.0253 in	S <sub>top</sub> =	75.09 in <sup>3</sup>	y-bar =	6.0253 in	S <sub>top</sub> =	75.09 in <sup>3</sup>
I <sub>x</sub> =	453.34 in <sup>4</sup>	S <sub>bott.</sub> =	75.24 in <sup>3</sup>	I <sub>x</sub> =	453.34 in <sup>4</sup>	S <sub>bott.</sub> =	75.24 in <sup>3</sup>
C <sub>top</sub> =	6.0372 in	A =	20.5875 in <sup>2</sup>	C <sub>top</sub> =	6.0372 in	A =	20.5875 in <sup>2</sup>
C <sub>bottom</sub> =	6.0253 in	r <sub>x</sub> =	4.6926 in	C <sub>bottom</sub> =	6.0253 in	r <sub>x</sub> =	4.6926 in
J =	2.0154 in <sup>4</sup>	Z =	87.36 in <sup>3</sup>			Z =	87.36 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		4.3045	4.1975	18.0682	0.0560	0.9025	3.5061	3.5620
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>20.59</b>		<b>86.42</b>	<b>62.56</b>		<b>38.94</b>	<b>101.50</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.1000 in	S <sub>right</sub> =	19.90 in <sup>3</sup>	x-bar =	5.1000 in	S <sub>right</sub> =	19.90 in <sup>3</sup>
I <sub>y</sub> =	101.50 in <sup>4</sup>	S <sub>left</sub> =	19.90 in <sup>3</sup>	I <sub>y</sub> =	101.50 in <sup>4</sup>	S <sub>left</sub> =	19.90 in <sup>3</sup>
C <sub>right</sub> =	5.1000 in	A =	20.5875 in <sup>2</sup>	C <sub>right</sub> =	5.1000 in	A =	20.5875 in <sup>2</sup>
C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.2204 in	C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.2204 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	262.08 k-ft	262.08 k-ft
V	204.72 k	204.72 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section





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Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

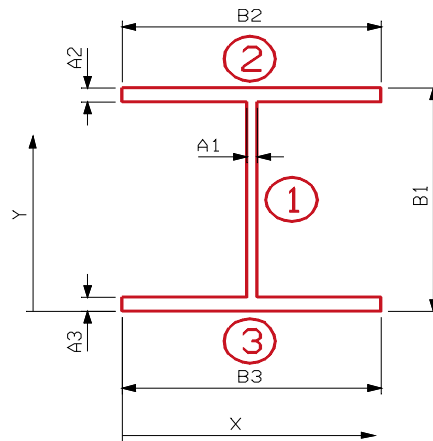
Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 33.0000$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in

$d_o = \text{N/A}$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F2-2**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		11.8125	16.5000	194.9063	976.7461	0.0000	0.0000	976.7461
2	Top Flange		6.0000	32.6250	195.7500	0.2813	16.1250	1560.0938	1560.3750
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	16.1250	1560.0938	1560.3750
<b>Total</b>			<b>23.81</b>		<b>392.91</b>	<b>977.31</b>		<b>3120.19</b>	<b>4097.50</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	16.5000	in	$S_{top} = 248.33$	$in^3$	y-bar =	16.5000	in	$S_{top} = 248.33$	$in^3$		
$I_x =$	4097.50	$in^4$	$S_{bott.} = 248.33$	$in^3$	$I_x =$	4097.50	$in^4$	$S_{bott.} = 248.33$	$in^3$		
$C_{top} =$	16.5000	in	A =	23.8125	$in^2$	$C_{top} =$	16.5000	in	A =	23.8125	$in^2$
$C_{bottom} =$	16.5000	in	$r_x =$	13.1177	in	$C_{bottom} =$	16.5000	in	$r_x =$	13.1177	in
J =	2.8037	$in^4$	Z =	286.52	$in^3$	Z =	286.52	$in^3$			



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Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		11.8125	4.0000	47.2500	0.1384	0.0000	0.0000	0.1384
2	Top Flange		6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange		6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>			<b>23.81</b>		<b>95.25</b>	<b>64.14</b>		<b>0.00</b>	<b>64.14</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 16.03 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 16.03 in <sup>3</sup>
I <sub>y</sub> =	64.14	in <sup>4</sup>	S <sub>left</sub> = 16.03 in <sup>3</sup>	I <sub>y</sub> =	64.14	in <sup>4</sup>	S <sub>left</sub> = 16.03 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 23.8125 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 23.8125 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.6412 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.6412 in

Non-composite Capacities*		
	AB	AI
M	859.57 k-ft	859.57 k-ft
V	207.62 k	207.62 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

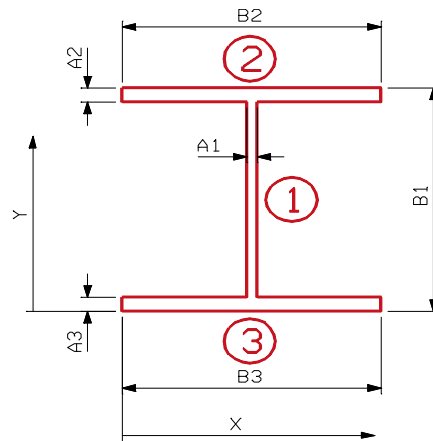
Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 38.5625$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in

$d_o = N/A$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



Fascia Stringer F1-3 Avg Span 1

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		13.8984	19.2813	267.9792	1590.9413	0.0000	0.0000	1590.9413
2	Top Flange		6.0000	38.1875	229.1250	0.2813	18.9063	2144.6777	2144.9590
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	18.9063	2144.6777	2144.9590
<b>Total</b>			<b>25.90</b>		<b>499.35</b>	<b>1591.50</b>		<b>4289.36</b>	<b>5880.86</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	19.2813	in	S <sub>top</sub> = 305.00 in <sup>3</sup>	y-bar =	19.2813	in	S <sub>top</sub> = 305.00 in <sup>3</sup>
I <sub>x</sub> =	5880.86	in <sup>4</sup>	S <sub>bottom</sub> = 305.00 in <sup>3</sup>	I <sub>x</sub> =	5880.86	in <sup>4</sup>	S <sub>bottom</sub> = 305.00 in <sup>3</sup>
C <sub>top</sub> =	19.2813	in	A = 25.8984 in <sup>2</sup>	C <sub>top</sub> =	19.2813	in	A = 25.8984 in <sup>2</sup>
C <sub>bottom</sub> =	19.2813	in	r <sub>x</sub> = 15.0690 in	C <sub>bottom</sub> =	19.2813	in	r <sub>x</sub> = 15.0690 in
J =	2.9015	in <sup>4</sup>	Z = 355.65 in <sup>3</sup>	Z =	355.65	in <sup>3</sup>	



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		13.8984	4.0000	55.5938	0.1629	0.0000	0.0000	0.1629
2	Top Flange		6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange		6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>			<b>25.90</b>		<b>103.59</b>	<b>64.16</b>		<b>0.00</b>	<b>64.16</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 16.04 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 16.04 in <sup>3</sup>
I <sub>y</sub> =	64.16	in <sup>4</sup>	S <sub>left</sub> = 16.04 in <sup>3</sup>	I <sub>y</sub> =	64.16	in <sup>4</sup>	S <sub>left</sub> = 16.04 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 25.8984 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 25.8984 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.5740 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.5740 in

Non-composite Capacities*		
	AB	AI
M	#####	#####
V	185.68 k	185.68 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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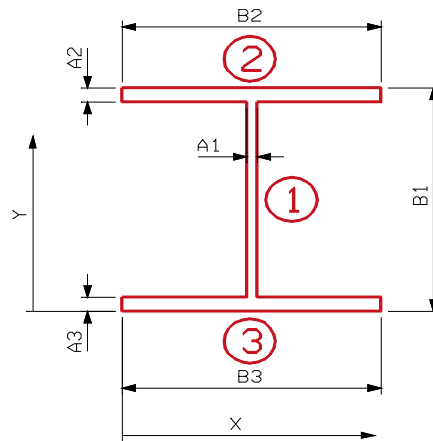
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 37.6563$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in
  
- $d_o = N/A$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F1-3 Avg Span 2**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		13.5586	18.8281	255.2829	1477.0669	0.0000	0.0000	1477.0669
2	Top Flange		6.0000	37.2813	223.6875	0.2813	18.4531	2043.1069	2043.3882
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	18.4531	2043.1069	2043.3882
<b>Total</b>			<b>25.56</b>		<b>481.22</b>	<b>1477.63</b>		<b>4086.21</b>	<b>5563.84</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	18.8281	in	S <sub>top</sub> =	295.51	in <sup>3</sup>	y-bar =	18.8281	in	S <sub>top</sub> =	295.51	in <sup>3</sup>
I <sub>x</sub> =	5563.84	in <sup>4</sup>	S <sub>bot.</sub> =	295.51	in <sup>3</sup>	I <sub>x</sub> =	5563.84	in <sup>4</sup>	S <sub>bot.</sub> =	295.51	in <sup>3</sup>
C <sub>top</sub> =	18.8281	in	A =	25.5586	in <sup>2</sup>	C <sub>top</sub> =	18.8281	in	A =	25.5586	in <sup>2</sup>
C <sub>bottom</sub> =	18.8281	in	r <sub>x</sub> =	14.7543	in	C <sub>bottom</sub> =	18.8281	in	r <sub>x</sub> =	14.7543	in
J =	2.8856	in <sup>4</sup>	Z =	343.99	in <sup>3</sup>	Z =	343.99	in <sup>3</sup>			



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		13.5586	4.0000	54.2344	0.1589	0.0000	0.0000	0.1589
2	Top Flange		6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange		6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>			<b>25.56</b>		<b>102.23</b>	<b>64.16</b>		<b>0.00</b>	<b>64.16</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 16.04 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 16.04 in <sup>3</sup>
I <sub>y</sub> =	64.16	in <sup>4</sup>	S <sub>left</sub> = 16.04 in <sup>3</sup>	I <sub>y</sub> =	64.16	in <sup>4</sup>	S <sub>left</sub> = 16.04 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 25.5586 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 25.5586 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.5844 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.5844 in

Non-composite Capacities*		
	AB	AI
M	#####	#####
V	190.34 k	190.34 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	14.3750 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	14.8750 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

Coped Stringer S1-3 @ FB H9

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	14.5425	98.6418	0.2500	7.2909	360.5703	360.8203
	Web	5.4155	7.3550	39.8306	84.8258	0.1034	0.0580	84.8838
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	7.0016	171.5760	171.6489
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.2516	108.4541	126.4541
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.7516	0.0000	0.0000
<b>Total</b>		<b>21.70</b>		<b>157.35</b>	<b>103.15</b>		<b>640.66</b>	<b>743.81</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	7.2516	in	S <sub>top</sub> =	97.57	in <sup>3</sup>	y-bar =	7.2516	in	S <sub>top</sub> =	97.57	in <sup>3</sup>
I <sub>x</sub> =	743.81	in <sup>4</sup>	S <sub>bottom</sub> =	102.57	in <sup>3</sup>	I <sub>x</sub> =	743.81	in <sup>4</sup>	S <sub>bottom</sub> =	102.57	in <sup>3</sup>
C <sub>top</sub> =	7.6234	in	A =	21.6985	in <sup>2</sup>	C <sub>top</sub> =	7.6234	in	A =	21.6985	in <sup>2</sup>
C <sub>bottom</sub> =	7.2516	in	r <sub>x</sub> =	5.8549	in	C <sub>bottom</sub> =	7.2516	in	r <sub>x</sub> =	5.8549	in
J =	2.0732	in <sup>4</sup>	Z =	114.87	in <sup>3</sup>	Z =	114.87	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		5.4155	4.1975	22.7314	0.0704	0.9025	4.4109	4.4813
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.70</b>		<b>91.08</b>	<b>62.58</b>		<b>39.84</b>	<b>102.42</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.1000	in	S <sub>right</sub> =	20.08	in <sup>3</sup>	x-bar =	5.1000	in	S <sub>right</sub> =	20.08	in <sup>3</sup>
I <sub>y</sub> =	102.42	in <sup>4</sup>	S <sub>left</sub> =	20.08	in <sup>3</sup>	I <sub>y</sub> =	102.42	in <sup>4</sup>	S <sub>left</sub> =	20.08	in <sup>3</sup>
C <sub>right</sub> =	5.1000	in	A =	21.6985	in <sup>2</sup>	C <sub>right</sub> =	5.1000	in	A =	21.6985	in <sup>2</sup>
C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1726	in	C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1726	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	344.61 k-ft	344.61 k-ft
V	227.91 k	227.91 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





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Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	14.3750 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	14.8750 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

Coped Stringer S2-3 @ FB H9

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	14.5425	98.6418	0.2500	7.2909	360.5703	360.8203
	Web	5.4155	7.3550	39.8306	84.8258	0.1034	0.0580	84.8838
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	7.0016	171.5760	171.6489
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.2516	108.4541	126.4541
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.7516	0.0000	0.0000
<b>Total</b>		<b>21.70</b>		<b>157.35</b>	<b>103.15</b>		<b>640.66</b>	<b>743.81</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	7.2516	in	S <sub>top</sub> =	97.57	in <sup>3</sup>	y-bar =	7.2516	in	S <sub>top</sub> =	97.57	in <sup>3</sup>
I <sub>x</sub> =	743.81	in <sup>4</sup>	S <sub>bottom</sub> =	102.57	in <sup>3</sup>	I <sub>x</sub> =	743.81	in <sup>4</sup>	S <sub>bottom</sub> =	102.57	in <sup>3</sup>
C <sub>top</sub> =	7.6234	in	A =	21.6985	in <sup>2</sup>	C <sub>top</sub> =	7.6234	in	A =	21.6985	in <sup>2</sup>
C <sub>bottom</sub> =	7.2516	in	r <sub>x</sub> =	5.8549	in	C <sub>bottom</sub> =	7.2516	in	r <sub>x</sub> =	5.8549	in
J =	2.0732	in <sup>4</sup>	Z =	114.87	in <sup>3</sup>	Z =	114.87	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		5.4155	4.1975	22.7314	0.0704	0.9025	4.4109	4.4813
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.70</b>		<b>91.08</b>	<b>62.58</b>		<b>39.84</b>	<b>102.42</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.1000	in	S <sub>right</sub> =	20.08	in <sup>3</sup>	x-bar =	5.1000	in	S <sub>right</sub> =	20.08	in <sup>3</sup>
I <sub>y</sub> =	102.42	in <sup>4</sup>	S <sub>left</sub> =	20.08	in <sup>3</sup>	I <sub>y</sub> =	102.42	in <sup>4</sup>	S <sub>left</sub> =	20.08	in <sup>3</sup>
C <sub>right</sub> =	5.1000	in	A =	21.6985	in <sup>2</sup>	C <sub>right</sub> =	5.1000	in	A =	21.6985	in <sup>2</sup>
C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1726	in	C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1726	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	344.61 k-ft	344.61 k-ft
V	227.91 k	227.91 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	14.8125 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	15.3125 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

Coped Stringer S3-3 @ FB H7

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	14.9800	101.6093	0.2500	7.5361	385.2211	385.4711
	Web	5.5883	7.5738	42.3241	93.2084	0.1298	0.0942	93.3025
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	7.1939	181.1349	181.2078
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.4439	118.4918	136.4918
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.9439	0.0000	0.0000
<b>Total</b>		<b>21.87</b>		<b>162.81</b>	<b>111.53</b>		<b>684.94</b>	<b>796.47</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	7.4439	in	S <sub>top</sub> =	101.22	in <sup>3</sup>	y-bar =	7.4439	in	S <sub>top</sub> =	101.22	in <sup>3</sup>
I <sub>x</sub> =	796.47	in <sup>4</sup>	S <sub>bottom</sub> =	107.00	in <sup>3</sup>	I <sub>x</sub> =	796.47	in <sup>4</sup>	S <sub>bottom</sub> =	107.00	in <sup>3</sup>
C <sub>top</sub> =	7.8686	in	A =	21.8713	in <sup>2</sup>	C <sub>top</sub> =	7.8686	in	A =	21.8713	in <sup>2</sup>
C <sub>bottom</sub> =	7.4439	in	r <sub>x</sub> =	6.0346	in	C <sub>bottom</sub> =	7.4439	in	r <sub>x</sub> =	6.0346	in
J =	2.0822	in <sup>4</sup>	Z =	119.39	in <sup>3</sup>	Z =	119.39	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		5.5883	4.1975	23.4567	0.0727	0.9025	4.5517	4.6243
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.87</b>		<b>91.80</b>	<b>62.58</b>		<b>39.98</b>	<b>102.56</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.1000	in	S <sub>right</sub> =	20.11	in <sup>3</sup>	x-bar =	5.1000	in	S <sub>right</sub> =	20.11	in <sup>3</sup>
I <sub>y</sub> =	102.56	in <sup>4</sup>	S <sub>left</sub> =	20.11	in <sup>3</sup>	I <sub>y</sub> =	102.56	in <sup>4</sup>	S <sub>left</sub> =	20.11	in <sup>3</sup>
C <sub>right</sub> =	5.1000	in	A =	21.8713	in <sup>2</sup>	C <sub>right</sub> =	5.1000	in	A =	21.8713	in <sup>2</sup>
C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1655	in	C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1655	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	358.17 k-ft	358.17 k-ft
V	231.52 k	231.52 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



Made By CTG  
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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	14.1875 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	14.6875 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

**Coped Stringer S3-3 @ FB H8**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	14.3550	97.3700	0.2500	7.1858	350.2426	350.4926
	Web	5.3414	7.2613	38.7851	81.3930	0.0920	0.0452	81.4382
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.9192	167.5649	167.6378
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.1692	104.2947	122.2947
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.6692	0.0000	0.0000
<b>Total</b>		<b>21.62</b>		<b>155.03</b>	<b>99.72</b>		<b>622.15</b>	<b>721.86</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	7.1692 in	S <sub>top</sub> =	96.01 in <sup>3</sup>	y-bar =	7.1692 in	S <sub>top</sub> =	96.01 in <sup>3</sup>
I <sub>x</sub> =	721.86 in <sup>4</sup>	S <sub>bott.</sub> =	100.69 in <sup>3</sup>	I <sub>x</sub> =	721.86 in <sup>4</sup>	S <sub>bott.</sub> =	100.69 in <sup>3</sup>
C <sub>top</sub> =	7.5183 in	A =	21.6244 in <sup>2</sup>	C <sub>top</sub> =	7.5183 in	A =	21.6244 in <sup>2</sup>
C <sub>bottom</sub> =	7.1692 in	r <sub>x</sub> =	5.7777 in	C <sub>bottom</sub> =	7.1692 in	r <sub>x</sub> =	5.7777 in
J =	2.0693 in <sup>4</sup>	Z =	112.95 in <sup>3</sup>			Z =	112.95 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web	5.3414	4.1975	22.4205	0.0694	0.9025	4.3506	4.4200
2 (Left)	Horizontal Leg	1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg	3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg	1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg	3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate	0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>		<b>21.62</b>		<b>90.77</b>	<b>62.58</b>		<b>39.78</b>	<b>102.36</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.1000 in	S <sub>right</sub> =	20.07 in <sup>3</sup>	x-bar =	5.1000 in	S <sub>right</sub> =	20.07 in <sup>3</sup>
I <sub>y</sub> =	102.36 in <sup>4</sup>	S <sub>left</sub> =	20.07 in <sup>3</sup>	I <sub>y</sub> =	102.36 in <sup>4</sup>	S <sub>left</sub> =	20.07 in <sup>3</sup>
C <sub>right</sub> =	5.1000 in	A =	21.6244 in <sup>2</sup>	C <sub>right</sub> =	5.1000 in	A =	21.6244 in <sup>2</sup>
C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.1756 in	C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.1756 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	338.85 k-ft	338.85 k-ft
V	226.37 k	226.37 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	14.0000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	H =	14.4375 in
$B_3 = t =$	0.3950 in	Gap =	0.4375 in

Coped Stringer S3-3 @ FB H9

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	14.1050	95.6742	0.2500	7.0530	337.4161	337.6660
	Web	5.2673	7.1050	37.4243	78.0540	0.0530	0.0148	78.0687
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.8020	161.9367	162.0096
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.0520	98.5137	116.5137
3	Additional Plate	0.0000	0.4375	0.0000	0.0000	6.6145	0.0000	0.0000
<b>Total</b>		<b>21.55</b>		<b>151.97</b>	<b>96.38</b>		<b>597.88</b>	<b>694.26</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	7.0520	in	S <sub>top</sub> =	94.00	in <sup>3</sup>	y-bar =	7.0520	in	S <sub>top</sub> =	94.00	in <sup>3</sup>
I <sub>x</sub> =	694.26	in <sup>4</sup>	S <sub>bottom</sub> =	98.45	in <sup>3</sup>	I <sub>x</sub> =	694.26	in <sup>4</sup>	S <sub>bottom</sub> =	98.45	in <sup>3</sup>
C <sub>top</sub> =	7.3855	in	A =	21.5503	in <sup>2</sup>	C <sub>top</sub> =	7.3855	in	A =	21.5503	in <sup>2</sup>
C <sub>bottom</sub> =	7.0520	in	r <sub>x</sub> =	5.6759	in	C <sub>bottom</sub> =	7.0520	in	r <sub>x</sub> =	5.6759	in
J =	2.0655	in <sup>4</sup>	Z =	110.53	in <sup>3</sup>	Z =	110.53	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		5.2673	4.1975	22.1096	0.0685	0.9025	4.2903	4.3588
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.55</b>		<b>90.46</b>	<b>62.58</b>		<b>39.72</b>	<b>102.30</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.1000	in	S <sub>right</sub> =	20.06	in <sup>3</sup>	x-bar =	5.1000	in	S <sub>right</sub> =	20.06	in <sup>3</sup>
I <sub>y</sub> =	102.30	in <sup>4</sup>	S <sub>left</sub> =	20.06	in <sup>3</sup>	I <sub>y</sub> =	102.30	in <sup>4</sup>	S <sub>left</sub> =	20.06	in <sup>3</sup>
C <sub>right</sub> =	5.1000	in	A =	21.5503	in <sup>2</sup>	C <sub>right</sub> =	5.1000	in	A =	21.5503	in <sup>2</sup>
C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1787	in	C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1787	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	331.59 k-ft	331.59 k-ft
V	224.82 k	224.82 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	12.7500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	13.2500 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

**Coped Stringer S4-3 @ FB H7**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	12.9175	87.6194	0.2500	6.3768	275.8179	276.0678
	Web	4.7736	6.5425	31.2311	58.0973	0.0018	0.0000	58.0973
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.2907	138.5068	138.5797
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.5407	75.2209	93.2209
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.0407	0.0000	0.0000
<b>Total</b>		<b>21.06</b>		<b>137.73</b>	<b>76.42</b>		<b>489.55</b>	<b>565.97</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.5407 in	S <sub>top</sub> =	84.36 in <sup>3</sup>	y-bar =	6.5407 in	S <sub>top</sub> =	84.36 in <sup>3</sup>
I <sub>x</sub> =	565.97 in <sup>4</sup>	S <sub>bott.</sub> =	86.53 in <sup>3</sup>	I <sub>x</sub> =	565.97 in <sup>4</sup>	S <sub>bott.</sub> =	86.53 in <sup>3</sup>
C <sub>top</sub> =	6.7093 in	A =	21.0566 in <sup>2</sup>	C <sub>top</sub> =	6.7093 in	A =	21.0566 in <sup>2</sup>
C <sub>bottom</sub> =	6.5407 in	r <sub>x</sub> =	5.1844 in	C <sub>bottom</sub> =	6.5407 in	r <sub>x</sub> =	5.1844 in
J =	2.0398 in <sup>4</sup>	Z =	98.65 in <sup>3</sup>	Z =	98.65 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		4.7736	4.1975	20.0371	0.0621	0.9025	3.8881	3.9502
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.06</b>		<b>88.38</b>	<b>62.57</b>		<b>39.32</b>	<b>101.89</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.1000 in	S <sub>right</sub> =	19.98 in <sup>3</sup>	x-bar =	5.1000 in	S <sub>right</sub> =	19.98 in <sup>3</sup>
I <sub>y</sub> =	101.89 in <sup>4</sup>	S <sub>left</sub> =	19.98 in <sup>3</sup>	I <sub>y</sub> =	101.89 in <sup>4</sup>	S <sub>left</sub> =	19.98 in <sup>3</sup>
C <sub>right</sub> =	5.1000 in	A =	21.0566 in <sup>2</sup>	C <sub>right</sub> =	5.1000 in	A =	21.0566 in <sup>2</sup>
C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.1997 in	C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.1997 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	295.95 k-ft	295.95 k-ft
V	214.51 k	214.51 k

F<sub>y</sub> = 36.00 ksi

\*Compact Section



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	12.2500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	12.7500 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

**Coped Stringer S4-3 @ FB H8**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	12.4175	84.2279	0.2500	6.0942	251.9170	252.1670
	Web	4.5761	6.2925	28.7950	51.1804	0.0308	0.0043	51.1848
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.0733	129.0967	129.1696
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.3233	66.2653	84.2653
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.8233	0.0000	0.0000
<b>Total</b>		<b>20.86</b>		<b>131.90</b>	<b>69.50</b>		<b>447.28</b>	<b>516.79</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	6.3233	in	S <sub>top</sub> =	80.41	in <sup>3</sup>	y-bar =	6.3233	in	S <sub>top</sub> =	80.41	in <sup>3</sup>
I <sub>x</sub> =	516.79	in <sup>4</sup>	S <sub>bott.</sub> =	81.73	in <sup>3</sup>	I <sub>x</sub> =	516.79	in <sup>4</sup>	S <sub>bott.</sub> =	81.73	in <sup>3</sup>
C <sub>top</sub> =	6.4267	in	A =	20.8591	in <sup>2</sup>	C <sub>top</sub> =	6.4267	in	A =	20.8591	in <sup>2</sup>
C <sub>bottom</sub> =	6.3233	in	r <sub>x</sub> =	4.9775	in	C <sub>bottom</sub> =	6.3233	in	r <sub>x</sub> =	4.9775	in
J =	2.0295	in <sup>4</sup>	Z =	93.83	in <sup>3</sup>	Z =	93.83	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web	4.5761	4.1975	19.2081	0.0595	0.9025	3.7272	3.7867
2 (Left)	Horizontal Leg	1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg	3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg	1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg	3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate	0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>		<b>20.86</b>		<b>87.56</b>	<b>62.57</b>		<b>39.16</b>	<b>101.72</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.1000	in	S <sub>right</sub> =	19.95	in <sup>3</sup>	x-bar =	5.1000	in	S <sub>right</sub> =	19.95	in <sup>3</sup>
I <sub>y</sub> =	101.72	in <sup>4</sup>	S <sub>left</sub> =	19.95	in <sup>3</sup>	I <sub>y</sub> =	101.72	in <sup>4</sup>	S <sub>left</sub> =	19.95	in <sup>3</sup>
C <sub>right</sub> =	5.1000	in	A =	20.8591	in <sup>2</sup>	C <sub>right</sub> =	5.1000	in	A =	20.8591	in <sup>2</sup>
C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.2083	in	C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.2083	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	281.49 k-ft	281.49 k-ft
V	210.39 k	210.39 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	12.1875 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	12.6875 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

**Coped Stringer S4-3 @ FB H9**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	12.3550	83.8040	0.2500	6.0589	249.0020	249.2520
	Web	4.5514	6.2613	28.4974	50.3566	0.0349	0.0055	50.3621
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.0461	127.9456	128.0185
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.2961	65.1875	83.1875
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.7961	0.0000	0.0000
<b>Total</b>		<b>20.83</b>		<b>131.18</b>	<b>68.68</b>		<b>442.14</b>	<b>510.82</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.2961 in	S <sub>top</sub> =	79.92 in <sup>3</sup>	y-bar =	6.2961 in	S <sub>top</sub> =	79.92 in <sup>3</sup>
I <sub>x</sub> =	510.82 in <sup>4</sup>	S <sub>bott.</sub> =	81.13 in <sup>3</sup>	I <sub>x</sub> =	510.82 in <sup>4</sup>	S <sub>bott.</sub> =	81.13 in <sup>3</sup>
C <sub>top</sub> =	6.3914 in	A =	20.8344 in <sup>2</sup>	C <sub>top</sub> =	6.3914 in	A =	20.8344 in <sup>2</sup>
C <sub>bottom</sub> =	6.2961 in	r <sub>x</sub> =	4.9516 in	C <sub>bottom</sub> =	6.2961 in	r <sub>x</sub> =	4.9516 in
J =	2.0282 in <sup>4</sup>	Z =	93.24 in <sup>3</sup>			Z =	93.24 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		4.5514	4.1975	19.1044	0.0592	0.9025	3.7071	3.7663
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>20.83</b>		<b>87.45</b>	<b>62.57</b>		<b>39.14</b>	<b>101.70</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.1000 in	S <sub>right</sub> =	19.94 in <sup>3</sup>	x-bar =	5.1000 in	S <sub>right</sub> =	19.94 in <sup>3</sup>
I <sub>y</sub> =	101.70 in <sup>4</sup>	S <sub>left</sub> =	19.94 in <sup>3</sup>	I <sub>y</sub> =	101.70 in <sup>4</sup>	S <sub>left</sub> =	19.94 in <sup>3</sup>
C <sub>right</sub> =	5.1000 in	A =	20.8344 in <sup>2</sup>	C <sub>right</sub> =	5.1000 in	A =	20.8344 in <sup>2</sup>
C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.2094 in	C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.2094 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	279.72 k-ft	279.72 k-ft
V	209.87 k	209.87 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	13.2500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	H =	13.7500 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

**Coped Stringer S5-3 @ FB H7**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	13.4175	91.0109	0.2500	6.6587	300.7471	300.9970
	Web	4.9711	6.7925	33.7660	65.6108	0.0337	0.0056	65.6165
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.5088	148.2754	148.3483
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.7588	84.7712	102.7712
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.2588	0.0000	0.0000
<b>Total</b>		<b>21.25</b>		<b>143.65</b>	<b>83.93</b>		<b>533.80</b>	<b>617.73</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.7588 in	S <sub>top</sub> =	88.36 in <sup>3</sup>	y-bar =	6.7588 in	S <sub>top</sub> =	88.36 in <sup>3</sup>
I <sub>x</sub> =	617.73 in <sup>4</sup>	S <sub>bott.</sub> =	91.40 in <sup>3</sup>	I <sub>x</sub> =	617.73 in <sup>4</sup>	S <sub>bott.</sub> =	91.40 in <sup>3</sup>
C <sub>top</sub> =	6.9912 in	A =	21.2541 in <sup>2</sup>	C <sub>top</sub> =	6.9912 in	A =	21.2541 in <sup>2</sup>
C <sub>bottom</sub> =	6.7588 in	r <sub>x</sub> =	5.3911 in	C <sub>bottom</sub> =	6.7588 in	r <sub>x</sub> =	5.3911 in
J =	2.0501 in <sup>4</sup>	Z =	103.54 in <sup>3</sup>	Z =	103.54 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		4.9711	4.1975	20.8661	0.0646	0.9025	4.0490	4.1136
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.25</b>		<b>89.21</b>	<b>62.57</b>		<b>39.48</b>	<b>102.05</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.1000 in	S <sub>right</sub> =	20.01 in <sup>3</sup>	x-bar =	5.1000 in	S <sub>right</sub> =	20.01 in <sup>3</sup>
I <sub>y</sub> =	102.05 in <sup>4</sup>	S <sub>left</sub> =	20.01 in <sup>3</sup>	I <sub>y</sub> =	102.05 in <sup>4</sup>	S <sub>left</sub> =	20.01 in <sup>3</sup>
C <sub>right</sub> =	5.1000 in	A =	21.2541 in <sup>2</sup>	C <sub>right</sub> =	5.1000 in	A =	21.2541 in <sup>2</sup>
C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.1912 in	C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.1912 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	310.62 k-ft	310.62 k-ft
V	218.64 k	218.64 k

F<sub>y</sub> = 36.00 ksi

\*Compact Section





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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	13.0000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	13.5000 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

Coped Stringer S5-3 @ FB H8

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	13.1675	89.3152	0.2500	6.5178	288.1543	288.4042
	Web	4.8723	6.6675	32.4862	61.7779	0.0178	0.0015	61.7795
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.3997	143.3462	143.4191
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.6497	79.9215	97.9215
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.1497	0.0000	0.0000
<b>Total</b>		<b>21.16</b>		<b>140.68</b>	<b>80.10</b>		<b>511.42</b>	<b>591.52</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.6497 in	S <sub>top</sub> =	86.35 in <sup>3</sup>	y-bar =	6.6497 in	S <sub>top</sub> =	86.35 in <sup>3</sup>
I <sub>x</sub> =	591.52 in <sup>4</sup>	S <sub>bott.</sub> =	88.96 in <sup>3</sup>	I <sub>x</sub> =	591.52 in <sup>4</sup>	S <sub>bott.</sub> =	88.96 in <sup>3</sup>
C <sub>top</sub> =	6.8503 in	A =	21.1553 in <sup>2</sup>	C <sub>top</sub> =	6.8503 in	A =	21.1553 in <sup>2</sup>
C <sub>bottom</sub> =	6.6497 in	r <sub>x</sub> =	5.2878 in	C <sub>bottom</sub> =	6.6497 in	r <sub>x</sub> =	5.2878 in
J =	2.0449 in <sup>4</sup>	Z =	101.08 in <sup>3</sup>	Z =	101.08 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		4.8723	4.1975	20.4516	0.0634	0.9025	3.9685	4.0319
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.16</b>		<b>88.80</b>	<b>62.57</b>		<b>39.40</b>	<b>101.97</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.1000 in	S <sub>right</sub> =	19.99 in <sup>3</sup>	x-bar =	5.1000 in	S <sub>right</sub> =	19.99 in <sup>3</sup>
I <sub>y</sub> =	101.97 in <sup>4</sup>	S <sub>left</sub> =	19.99 in <sup>3</sup>	I <sub>y</sub> =	101.97 in <sup>4</sup>	S <sub>left</sub> =	19.99 in <sup>3</sup>
C <sub>right</sub> =	5.1000 in	A =	21.1553 in <sup>2</sup>	C <sub>right</sub> =	5.1000 in	A =	21.1553 in <sup>2</sup>
C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.1954 in	C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.1954 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	303.24 k-ft	303.24 k-ft
V	216.57 k	216.57 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	13.0000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	H =	13.5000 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

**Coped Stringer S5-3 @ FB H9**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	13.1675	89.3152	0.2500	6.5178	288.1543	288.4042
	Web	4.8723	6.6675	32.4862	61.7779	0.0178	0.0015	61.7795
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.3997	143.3462	143.4191
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.6497	79.9215	97.9215
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.1497	0.0000	0.0000
<b>Total</b>		<b>21.16</b>		<b>140.68</b>	<b>80.10</b>		<b>511.42</b>	<b>591.52</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.6497 in	S <sub>top</sub> =	86.35 in <sup>3</sup>	y-bar =	6.6497 in	S <sub>top</sub> =	86.35 in <sup>3</sup>
I <sub>x</sub> =	591.52 in <sup>4</sup>	S <sub>bott.</sub> =	88.96 in <sup>3</sup>	I <sub>x</sub> =	591.52 in <sup>4</sup>	S <sub>bott.</sub> =	88.96 in <sup>3</sup>
C <sub>top</sub> =	6.8503 in	A =	21.1553 in <sup>2</sup>	C <sub>top</sub> =	6.8503 in	A =	21.1553 in <sup>2</sup>
C <sub>bottom</sub> =	6.6497 in	r <sub>x</sub> =	5.2878 in	C <sub>bottom</sub> =	6.6497 in	r <sub>x</sub> =	5.2878 in
J =	2.0449 in <sup>4</sup>	Z =	101.08 in <sup>3</sup>	Z =	101.08 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		4.8723	4.1975	20.4516	0.0634	0.9025	3.9685	4.0319
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.16</b>		<b>88.80</b>	<b>62.57</b>		<b>39.40</b>	<b>101.97</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.1000 in	S <sub>right</sub> =	19.99 in <sup>3</sup>	x-bar =	5.1000 in	S <sub>right</sub> =	19.99 in <sup>3</sup>
I <sub>y</sub> =	101.97 in <sup>4</sup>	S <sub>left</sub> =	19.99 in <sup>3</sup>	I <sub>y</sub> =	101.97 in <sup>4</sup>	S <sub>left</sub> =	19.99 in <sup>3</sup>
C <sub>right</sub> =	5.1000 in	A =	21.1553 in <sup>2</sup>	C <sub>right</sub> =	5.1000 in	A =	21.1553 in <sup>2</sup>
C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.1954 in	C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.1954 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	303.24 k-ft	303.24 k-ft
V	216.57 k	216.57 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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Date 3/19/2012  
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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	13.6250 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	14.1250 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

**Coped Stringer S6-3 @ FB H7**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	13.7925	93.5545	0.2500	6.8698	320.1156	320.3656
	Web	5.1192	6.9800	35.7320	71.6524	0.0573	0.0168	71.6692
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.6727	155.8384	155.9113
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.9227	92.3266	110.3266
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.4227	0.0000	0.0000
<b>Total</b>		<b>21.40</b>		<b>148.16</b>	<b>89.98</b>		<b>568.30</b>	<b>658.27</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	6.9227	in	S <sub>top</sub> =	91.40	in <sup>3</sup>	y-bar =	6.9227	in	S <sub>top</sub> =	91.40	in <sup>3</sup>
I <sub>x</sub> =	658.27	in <sup>4</sup>	S <sub>bott.</sub> =	95.09	in <sup>3</sup>	I <sub>x</sub> =	658.27	in <sup>4</sup>	S <sub>bott.</sub> =	95.09	in <sup>3</sup>
C <sub>top</sub> =	7.2023	in	A =	21.4022	in <sup>2</sup>	C <sub>top</sub> =	7.2023	in	A =	21.4022	in <sup>2</sup>
C <sub>bottom</sub> =	6.9227	in	r <sub>x</sub> =	5.5459	in	C <sub>bottom</sub> =	6.9227	in	r <sub>x</sub> =	5.5459	in
J =	2.0578	in <sup>4</sup>	Z =	107.27	in <sup>3</sup>	Z =	107.27	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		5.1192	4.1975	21.4878	0.0666	0.9025	4.1696	4.2362
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.40</b>		<b>89.84</b>	<b>62.57</b>		<b>39.60</b>	<b>102.17</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.1000	in	S <sub>right</sub> =	20.03	in <sup>3</sup>	x-bar =	5.1000	in	S <sub>right</sub> =	20.03	in <sup>3</sup>
I <sub>y</sub> =	102.17	in <sup>4</sup>	S <sub>left</sub> =	20.03	in <sup>3</sup>	I <sub>y</sub> =	102.17	in <sup>4</sup>	S <sub>left</sub> =	20.03	in <sup>3</sup>
C <sub>right</sub> =	5.1000	in	A =	21.4022	in <sup>2</sup>	C <sub>right</sub> =	5.1000	in	A =	21.4022	in <sup>2</sup>
C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1849	in	C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1849	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	321.81 k-ft	321.81 k-ft
V	221.73 k	221.73 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	13.6250 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	14.1250 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

Coped Stringer S6-3 @ FB H8

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	13.7925	93.5545	0.2500	6.8698	320.1156	320.3656
	Web	5.1192	6.9800	35.7320	71.6524	0.0573	0.0168	71.6692
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.6727	155.8384	155.9113
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.9227	92.3266	110.3266
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.4227	0.0000	0.0000
<b>Total</b>		<b>21.40</b>		<b>148.16</b>	<b>89.98</b>		<b>568.30</b>	<b>658.27</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	6.9227	in	S <sub>top</sub> =	91.40	in <sup>3</sup>	y-bar =	6.9227	in	S <sub>top</sub> =	91.40	in <sup>3</sup>
I <sub>x</sub> =	658.27	in <sup>4</sup>	S <sub>bott.</sub> =	95.09	in <sup>3</sup>	I <sub>x</sub> =	658.27	in <sup>4</sup>	S <sub>bott.</sub> =	95.09	in <sup>3</sup>
C <sub>top</sub> =	7.2023	in	A =	21.4022	in <sup>2</sup>	C <sub>top</sub> =	7.2023	in	A =	21.4022	in <sup>2</sup>
C <sub>bottom</sub> =	6.9227	in	r <sub>x</sub> =	5.5459	in	C <sub>bottom</sub> =	6.9227	in	r <sub>x</sub> =	5.5459	in
J =	2.0578	in <sup>4</sup>	Z =	107.27	in <sup>3</sup>	Z =	107.27	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		5.1192	4.1975	21.4878	0.0666	0.9025	4.1696	4.2362
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.40</b>		<b>89.84</b>	<b>62.57</b>		<b>39.60</b>	<b>102.17</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.1000	in	S <sub>right</sub> =	20.03	in <sup>3</sup>	x-bar =	5.1000	in	S <sub>right</sub> =	20.03	in <sup>3</sup>
I <sub>y</sub> =	102.17	in <sup>4</sup>	S <sub>left</sub> =	20.03	in <sup>3</sup>	I <sub>y</sub> =	102.17	in <sup>4</sup>	S <sub>left</sub> =	20.03	in <sup>3</sup>
C <sub>right</sub> =	5.1000	in	A =	21.4022	in <sup>2</sup>	C <sub>right</sub> =	5.1000	in	A =	21.4022	in <sup>2</sup>
C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1849	in	C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1849	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	321.81 k-ft	321.81 k-ft
V	221.73 k	221.73 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





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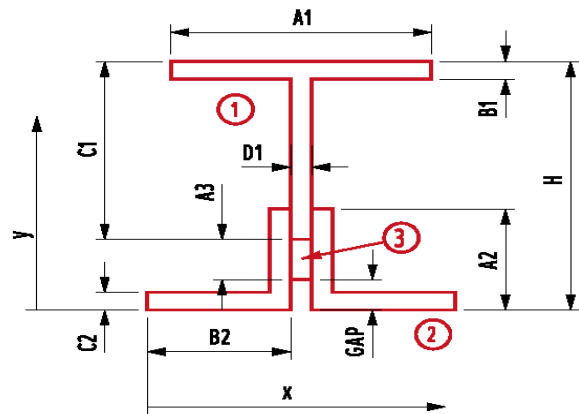
Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	13.2500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	H =	13.7500 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

**Coped Stringer S6-3 @ FB H9**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	13.4175	91.0109	0.2500	6.6587	300.7471	300.9970
	Web	4.9711	6.7925	33.7660	65.6108	0.0337	0.0056	65.6165
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.5088	148.2754	148.3483
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.7588	84.7712	102.7712
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.2588	0.0000	0.0000
<b>Total</b>		<b>21.25</b>		<b>143.65</b>	<b>83.93</b>		<b>533.80</b>	<b>617.73</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.7588 in	S <sub>top</sub> =	88.36 in <sup>3</sup>	y-bar =	6.7588 in	S <sub>top</sub> =	88.36 in <sup>3</sup>
I <sub>x</sub> =	617.73 in <sup>4</sup>	S <sub>bott.</sub> =	91.40 in <sup>3</sup>	I <sub>x</sub> =	617.73 in <sup>4</sup>	S <sub>bott.</sub> =	91.40 in <sup>3</sup>
C <sub>top</sub> =	6.9912 in	A =	21.2541 in <sup>2</sup>	C <sub>top</sub> =	6.9912 in	A =	21.2541 in <sup>2</sup>
C <sub>bottom</sub> =	6.7588 in	r <sub>x</sub> =	5.3911 in	C <sub>bottom</sub> =	6.7588 in	r <sub>x</sub> =	5.3911 in
J =	2.0501 in <sup>4</sup>	Z =	103.54 in <sup>3</sup>	Z =	103.54 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		4.9711	4.1975	20.8661	0.0646	0.9025	4.0490	4.1136
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.25</b>		<b>89.21</b>	<b>62.57</b>		<b>39.48</b>	<b>102.05</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.1000 in	S <sub>right</sub> =	20.01 in <sup>3</sup>	x-bar =	5.1000 in	S <sub>right</sub> =	20.01 in <sup>3</sup>
I <sub>y</sub> =	102.05 in <sup>4</sup>	S <sub>left</sub> =	20.01 in <sup>3</sup>	I <sub>y</sub> =	102.05 in <sup>4</sup>	S <sub>left</sub> =	20.01 in <sup>3</sup>
C <sub>right</sub> =	5.1000 in	A =	21.2541 in <sup>2</sup>	C <sub>right</sub> =	5.1000 in	A =	21.2541 in <sup>2</sup>
C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.1912 in	C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.1912 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	310.62 k-ft	310.62 k-ft
V	218.64 k	218.64 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	11.5625 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	12.0625 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

**Coped Stringer S7-3 @ FB H7**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	11.7300	79.5646	0.2500	5.7047	220.7428	220.9928
	Web	4.3045	5.9488	25.6065	42.5987	0.0766	0.0252	42.6239
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.7753	116.7396	116.8125
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.0253	54.9149	72.9149
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.5253	0.0000	0.0000
<b>Total</b>		<b>20.59</b>		<b>124.05</b>	<b>60.92</b>		<b>392.42</b>	<b>453.34</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.0253 in	S <sub>top</sub> =	75.09 in <sup>3</sup>	y-bar =	6.0253 in	S <sub>top</sub> =	75.09 in <sup>3</sup>
I <sub>x</sub> =	453.34 in <sup>4</sup>	S <sub>bott.</sub> =	75.24 in <sup>3</sup>	I <sub>x</sub> =	453.34 in <sup>4</sup>	S <sub>bott.</sub> =	75.24 in <sup>3</sup>
C <sub>top</sub> =	6.0372 in	A =	20.5875 in <sup>2</sup>	C <sub>top</sub> =	6.0372 in	A =	20.5875 in <sup>2</sup>
C <sub>bottom</sub> =	6.0253 in	r <sub>x</sub> =	4.6926 in	C <sub>bottom</sub> =	6.0253 in	r <sub>x</sub> =	4.6926 in
J =	2.0154 in <sup>4</sup>	Z =	87.36 in <sup>3</sup>			Z =	87.36 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		4.3045	4.1975	18.0682	0.0560	0.9025	3.5061	3.5620
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>20.59</b>		<b>86.42</b>	<b>62.56</b>		<b>38.94</b>	<b>101.50</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.1000 in	S <sub>right</sub> =	19.90 in <sup>3</sup>	x-bar =	5.1000 in	S <sub>right</sub> =	19.90 in <sup>3</sup>
I <sub>y</sub> =	101.50 in <sup>4</sup>	S <sub>left</sub> =	19.90 in <sup>3</sup>	I <sub>y</sub> =	101.50 in <sup>4</sup>	S <sub>left</sub> =	19.90 in <sup>3</sup>
C <sub>right</sub> =	5.1000 in	A =	20.5875 in <sup>2</sup>	C <sub>right</sub> =	5.1000 in	A =	20.5875 in <sup>2</sup>
C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.2204 in	C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.2204 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	262.08 k-ft	262.08 k-ft
V	204.72 k	204.72 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section</b>	W16x67	<b>Bottom Angles:</b>	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	11.6875 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	12.1875 in
$B_3 = t =$	0.3950 in	$Gap =$	0.5000 in

**Coped Stringer S7-3 @ FB H8**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	11.8550	80.4125	0.2500	5.7756	226.2648	226.5147
	Web	4.3539	6.0113	26.1723	44.0815	0.0681	0.0202	44.1017
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.8294	118.9364	119.0093
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.0794	56.8960	74.8960
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.5794	0.0000	0.0000
<b>Total</b>		<b>20.64</b>		<b>125.46</b>	<b>62.40</b>		<b>402.12</b>	<b>464.52</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.0794 in	S <sub>top</sub> =	76.05 in <sup>3</sup>	y-bar =	6.0794 in	S <sub>top</sub> =	76.05 in <sup>3</sup>
I <sub>x</sub> =	464.52 in <sup>4</sup>	S <sub>bott.</sub> =	76.41 in <sup>3</sup>	I <sub>x</sub> =	464.52 in <sup>4</sup>	S <sub>bott.</sub> =	76.41 in <sup>3</sup>
C <sub>top</sub> =	6.1081 in	A =	20.6369 in <sup>2</sup>	C <sub>top</sub> =	6.1081 in	A =	20.6369 in <sup>2</sup>
C <sub>bottom</sub> =	6.0794 in	r <sub>x</sub> =	4.7444 in	C <sub>bottom</sub> =	6.0794 in	r <sub>x</sub> =	4.7444 in
J =	2.0180 in <sup>4</sup>	Z =	88.52 in <sup>3</sup>	Z =	88.52 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		4.3539	4.1975	18.2754	0.0566	0.9025	3.5463	3.6029
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>20.64</b>		<b>86.62</b>	<b>62.56</b>		<b>38.98</b>	<b>101.54</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.1000 in	S <sub>right</sub> =	19.91 in <sup>3</sup>	x-bar =	5.1000 in	S <sub>right</sub> =	19.91 in <sup>3</sup>
I <sub>y</sub> =	101.54 in <sup>4</sup>	S <sub>left</sub> =	19.91 in <sup>3</sup>	I <sub>y</sub> =	101.54 in <sup>4</sup>	S <sub>left</sub> =	19.91 in <sup>3</sup>
C <sub>right</sub> =	5.1000 in	A =	20.6369 in <sup>2</sup>	C <sub>right</sub> =	5.1000 in	A =	20.6369 in <sup>2</sup>
C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.2182 in	C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.2182 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
<b>M</b>	265.56 k-ft	265.56 k-ft
<b>V</b>	205.75 k	205.75 k

<b>F<sub>y</sub> =</b>	<b>36.00 ksi</b>
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\*Compact Section



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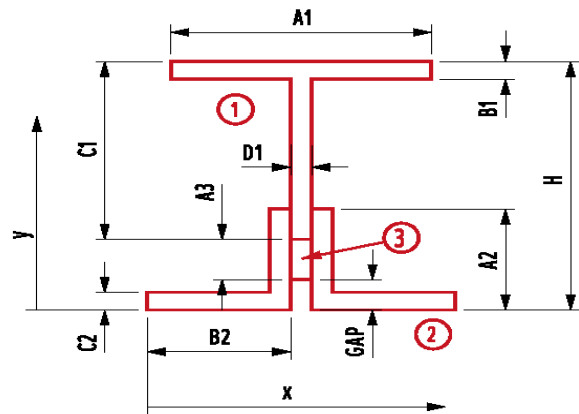
Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	12.1875 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	12.6875 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

**Coped Stringer S7-3 @ FB H9**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	12.3550	83.8040	0.2500	6.0589	249.0020	249.2520
	Web	4.5514	6.2613	28.4974	50.3566	0.0349	0.0055	50.3621
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.0461	127.9456	128.0185
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.2961	65.1875	83.1875
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.7961	0.0000	0.0000
<b>Total</b>		<b>20.83</b>		<b>131.18</b>	<b>68.68</b>		<b>442.14</b>	<b>510.82</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.2961 in	S <sub>top</sub> =	79.92 in <sup>3</sup>	y-bar =	6.2961 in	S <sub>top</sub> =	79.92 in <sup>3</sup>
I <sub>x</sub> =	510.82 in <sup>4</sup>	S <sub>bott.</sub> =	81.13 in <sup>3</sup>	I <sub>x</sub> =	510.82 in <sup>4</sup>	S <sub>bott.</sub> =	81.13 in <sup>3</sup>
C <sub>top</sub> =	6.3914 in	A =	20.8344 in <sup>2</sup>	C <sub>top</sub> =	6.3914 in	A =	20.8344 in <sup>2</sup>
C <sub>bottom</sub> =	6.2961 in	r <sub>x</sub> =	4.9516 in	C <sub>bottom</sub> =	6.2961 in	r <sub>x</sub> =	4.9516 in
J =	2.0282 in <sup>4</sup>	Z =	93.24 in <sup>3</sup>			Z =	93.24 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		4.5514	4.1975	19.1044	0.0592	0.9025	3.7071	3.7663
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>20.83</b>		<b>87.45</b>	<b>62.57</b>		<b>39.14</b>	<b>101.70</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.1000 in	S <sub>right</sub> =	19.94 in <sup>3</sup>	x-bar =	5.1000 in	S <sub>right</sub> =	19.94 in <sup>3</sup>
I <sub>y</sub> =	101.70 in <sup>4</sup>	S <sub>left</sub> =	19.94 in <sup>3</sup>	I <sub>y</sub> =	101.70 in <sup>4</sup>	S <sub>left</sub> =	19.94 in <sup>3</sup>
C <sub>right</sub> =	5.1000 in	A =	20.8344 in <sup>2</sup>	C <sub>right</sub> =	5.1000 in	A =	20.8344 in <sup>2</sup>
C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.2094 in	C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.2094 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	279.72 k-ft	279.72 k-ft
V	209.87 k	209.87 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





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Job No. P402110046  
Sheet No. \_\_\_\_\_

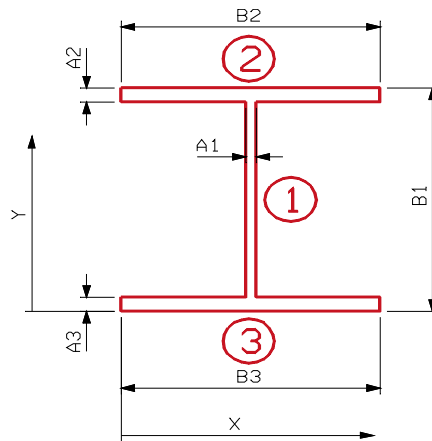
Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 33.0000$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in

$d_o = N/A$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F2-3**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		11.8125	16.5000	194.9063	976.7461	0.0000	0.0000	976.7461
2	Top Flange		6.0000	32.6250	195.7500	0.2813	16.1250	1560.0938	1560.3750
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	16.1250	1560.0938	1560.3750
<b>Total</b>			<b>23.81</b>		<b>392.91</b>	<b>977.31</b>		<b>3120.19</b>	<b>4097.50</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	16.5000	in	S <sub>top</sub> =	248.33	in <sup>3</sup>	y-bar =	16.5000	in	S <sub>top</sub> =	248.33	in <sup>3</sup>
I <sub>x</sub> =	4097.50	in <sup>4</sup>	S <sub>bott.</sub> =	248.33	in <sup>3</sup>	I <sub>x</sub> =	4097.50	in <sup>4</sup>	S <sub>bott.</sub> =	248.33	in <sup>3</sup>
C <sub>top</sub> =	16.5000	in	A =	23.8125	in <sup>2</sup>	C <sub>top</sub> =	16.5000	in	A =	23.8125	in <sup>2</sup>
C <sub>bottom</sub> =	16.5000	in	r <sub>x</sub> =	13.1177	in	C <sub>bottom</sub> =	16.5000	in	r <sub>x</sub> =	13.1177	in
J =	2.8037	in <sup>4</sup>	Z =	286.52	in <sup>3</sup>	J =	2.8037	in <sup>4</sup>	Z =	286.52	in <sup>3</sup>



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Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		11.8125	4.0000	47.2500	0.1384	0.0000	0.0000	0.1384
2	Top Flange		6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange		6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>			<b>23.81</b>		<b>95.25</b>	<b>64.14</b>		<b>0.00</b>	<b>64.14</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 16.03 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 16.03 in <sup>3</sup>
I <sub>y</sub> =	64.14	in <sup>4</sup>	S <sub>left</sub> = 16.03 in <sup>3</sup>	I <sub>y</sub> =	64.14	in <sup>4</sup>	S <sub>left</sub> = 16.03 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 23.8125 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 23.8125 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.6412 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.6412 in

Non-composite Capacities*		
	AB	AI
M	859.57 k-ft	859.57 k-ft
V	207.62 k	207.62 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Job No. P402110046  
Sheet No. \_\_\_\_\_

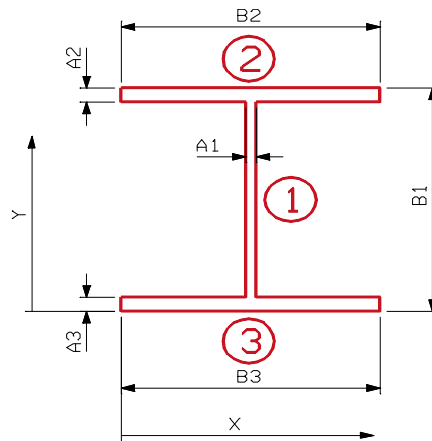
Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 37.1875$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in

$d_o = N/A$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F1-4**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		13.3828	18.5938	248.8367	1420.3599	0.0000	0.0000	1420.3599
2	Top Flange		6.0000	36.8125	220.8750	0.2813	18.2188	1991.5371	1991.8184
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	18.2188	1991.5371	1991.8184
<b>Total</b>			<b>25.38</b>		<b>471.96</b>	<b>1420.92</b>		<b>3983.07</b>	<b>5404.00</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	18.5938	in	S <sub>top</sub> = 290.64 in <sup>3</sup>	y-bar =	18.5938	in	S <sub>top</sub> = 290.64 in <sup>3</sup>
I <sub>x</sub> =	5404.00	in <sup>4</sup>	S <sub>bottom</sub> = 290.64 in <sup>3</sup>	I <sub>x</sub> =	5404.00	in <sup>4</sup>	S <sub>bottom</sub> = 290.64 in <sup>3</sup>
C <sub>top</sub> =	18.5938	in	A = 25.3828 in <sup>2</sup>	C <sub>top</sub> =	18.5938	in	A = 25.3828 in <sup>2</sup>
C <sub>bottom</sub> =	18.5938	in	r <sub>x</sub> = 14.5911 in	C <sub>bottom</sub> =	18.5938	in	r <sub>x</sub> = 14.5911 in
J =	2.8773	in <sup>4</sup>	Z = 338.02 in <sup>3</sup>				Z = <b>338.02</b> in <sup>3</sup>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		13.3828	4.0000	53.5313	0.1568	0.0000	0.0000	0.1568
2	Top Flange		6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange		6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>			<b>25.38</b>		<b>101.53</b>	<b>64.16</b>		<b>0.00</b>	<b>64.16</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	4.0000	in	S <sub>right</sub> =	16.04	in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> =	16.04	in <sup>3</sup>
I <sub>y</sub> =	64.16	in <sup>4</sup>	S <sub>left</sub> =	16.04	in <sup>3</sup>	I <sub>y</sub> =	64.16	in <sup>4</sup>	S <sub>left</sub> =	16.04	in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A =	25.3828	in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A =	25.3828	in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> =	1.5898	in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> =	1.5898	in

Non-composite Capacities*		
	AB	AI
M	#####	#####
V	192.84 k	192.84 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	14.3750 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	14.8750 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

**Coped Stringer S1-4 @ FB H9**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	14.5425	98.6418	0.2500	7.2909	360.5703	360.8203
	Web	5.4155	7.3550	39.8306	84.8258	0.1034	0.0580	84.8838
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	7.0016	171.5760	171.6489
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.2516	108.4541	126.4541
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.7516	0.0000	0.0000
<b>Total</b>		<b>21.70</b>		<b>157.35</b>	<b>103.15</b>		<b>640.66</b>	<b>743.81</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	7.2516	in	S <sub>top</sub> =	97.57	in <sup>3</sup>	y-bar =	7.2516	in	S <sub>top</sub> =	97.57	in <sup>3</sup>
I <sub>x</sub> =	743.81	in <sup>4</sup>	S <sub>bottom</sub> =	102.57	in <sup>3</sup>	I <sub>x</sub> =	743.81	in <sup>4</sup>	S <sub>bottom</sub> =	102.57	in <sup>3</sup>
C <sub>top</sub> =	7.6234	in	A =	21.6985	in <sup>2</sup>	C <sub>top</sub> =	7.6234	in	A =	21.6985	in <sup>2</sup>
C <sub>bottom</sub> =	7.2516	in	r <sub>x</sub> =	5.8549	in	C <sub>bottom</sub> =	7.2516	in	r <sub>x</sub> =	5.8549	in
J =	2.0732	in <sup>4</sup>	Z =	114.87	in <sup>3</sup>	Z =	114.87	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		5.4155	4.1975	22.7314	0.0704	0.9025	4.4109	4.4813
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.70</b>		<b>91.08</b>	<b>62.58</b>		<b>39.84</b>	<b>102.42</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.1000	in	S <sub>right</sub> =	20.08	in <sup>3</sup>	x-bar =	5.1000	in	S <sub>right</sub> =	20.08	in <sup>3</sup>
I <sub>y</sub> =	102.42	in <sup>4</sup>	S <sub>left</sub> =	20.08	in <sup>3</sup>	I <sub>y</sub> =	102.42	in <sup>4</sup>	S <sub>left</sub> =	20.08	in <sup>3</sup>
C <sub>right</sub> =	5.1000	in	A =	21.6985	in <sup>2</sup>	C <sub>right</sub> =	5.1000	in	A =	21.6985	in <sup>2</sup>
C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1726	in	C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1726	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	344.61 k-ft	344.61 k-ft
V	227.91 k	227.91 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	14.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	15.0000 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

Coped Stringer S1-4 @ FB H10

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	14.6675	99.4897	0.2500	7.3610	367.5345	367.7845
	Web	5.4648	7.4175	40.5353	87.1672	0.1110	0.0674	87.2346
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	7.0565	174.2786	174.3515
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.3065	111.2745	129.2745
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.8065	0.0000	0.0000
<b>Total</b>		<b>21.75</b>		<b>158.90</b>	<b>105.49</b>		<b>653.15</b>	<b>758.65</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	7.3065	in	S <sub>top</sub> =	98.61	in <sup>3</sup>	y-bar =	7.3065	in	S <sub>top</sub> =	98.61	in <sup>3</sup>
I <sub>x</sub> =	758.65	in <sup>4</sup>	S <sub>bott.</sub> =	103.83	in <sup>3</sup>	I <sub>x</sub> =	758.65	in <sup>4</sup>	S <sub>bott.</sub> =	103.83	in <sup>3</sup>
C <sub>top</sub> =	7.6935	in	A =	21.7478	in <sup>2</sup>	C <sub>top</sub> =	7.6935	in	A =	21.7478	in <sup>2</sup>
C <sub>bottom</sub> =	7.3065	in	r <sub>x</sub> =	5.9062	in	C <sub>bottom</sub> =	7.3065	in	r <sub>x</sub> =	5.9062	in
J =	2.0758	in <sup>4</sup>	Z =	116.15	in <sup>3</sup>	Z =	116.15	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		5.4648	4.1975	22.9386	0.0711	0.9025	4.4511	4.5222
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.75</b>		<b>91.29</b>	<b>62.58</b>		<b>39.88</b>	<b>102.46</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.1000	in	S <sub>right</sub> =	20.09	in <sup>3</sup>	x-bar =	5.1000	in	S <sub>right</sub> =	20.09	in <sup>3</sup>
I <sub>y</sub> =	102.46	in <sup>4</sup>	S <sub>left</sub> =	20.09	in <sup>3</sup>	I <sub>y</sub> =	102.46	in <sup>4</sup>	S <sub>left</sub> =	20.09	in <sup>3</sup>
C <sub>right</sub> =	5.1000	in	A =	21.7478	in <sup>2</sup>	C <sub>right</sub> =	5.1000	in	A =	21.7478	in <sup>2</sup>
C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1705	in	C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1705	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	348.45 k-ft	348.45 k-ft
V	228.95 k	228.95 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	13.8125 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	14.3125 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

Coped Stringer S1-4 @ FB H11

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	13.9800	94.8263	0.2500	6.9752	330.0150	330.2649
	Web	5.1933	7.0738	36.7358	74.8075	0.0689	0.0247	74.8322
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.7548	159.6962	159.7691
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.0048	96.2311	114.2311
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.5048	0.0000	0.0000
<b>Total</b>		<b>21.48</b>		<b>150.44</b>	<b>93.13</b>		<b>585.97</b>	<b>679.10</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar = 7.0048 in	S <sub>top</sub> = 92.93 in <sup>3</sup>			y-bar = 7.0048 in	S <sub>top</sub> = 92.93 in <sup>3</sup>		
I <sub>x</sub> = 679.10 in <sup>4</sup>	S <sub>bottom</sub> = 96.95 in <sup>3</sup>			I <sub>x</sub> = 679.10 in <sup>4</sup>	S <sub>bottom</sub> = 96.95 in <sup>3</sup>		
C <sub>top</sub> = 7.3077 in	A = 21.4763 in <sup>2</sup>			C <sub>top</sub> = 7.3077 in	A = 21.4763 in <sup>2</sup>		
C <sub>bottom</sub> = 7.0048 in	r <sub>x</sub> = 5.6232 in			C <sub>bottom</sub> = 7.0048 in	r <sub>x</sub> = 5.6232 in		
J = 2.0616 in <sup>4</sup>	Z = 109.15 in <sup>3</sup>				Z = 109.15 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		5.1933	4.1975	21.7987	0.0675	0.9025	4.2299	4.2975
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.48</b>		<b>90.15</b>	<b>62.57</b>		<b>39.66</b>	<b>102.23</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar = 5.1000 in	S <sub>right</sub> = 20.05 in <sup>3</sup>			x-bar = 5.1000 in	S <sub>right</sub> = 20.05 in <sup>3</sup>		
I <sub>y</sub> = 102.23 in <sup>4</sup>	S <sub>left</sub> = 20.05 in <sup>3</sup>			I <sub>y</sub> = 102.23 in <sup>4</sup>	S <sub>left</sub> = 20.05 in <sup>3</sup>		
C <sub>right</sub> = 5.1000 in	A = 21.4763 in <sup>2</sup>			C <sub>right</sub> = 5.1000 in	A = 21.4763 in <sup>2</sup>		
C <sub>left</sub> = 5.1000 in	r <sub>y</sub> = 2.1818 in			C <sub>left</sub> = 5.1000 in	r <sub>y</sub> = 2.1818 in		

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	327.45 k-ft	327.45 k-ft
V	223.28 k	223.28 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



Made By CTG  
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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	12.2500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	H =	12.7500 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

Coped Stringer S1-4 @ FB H12

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	12.4175	84.2279	0.2500	6.0942	251.9170	252.1670
	Web	4.5761	6.2925	28.7950	51.1804	0.0308	0.0043	51.1848
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.0733	129.0967	129.1696
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.3233	66.2653	84.2653
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.8233	0.0000	0.0000
<b>Total</b>		<b>20.86</b>		<b>131.90</b>	<b>69.50</b>		<b>447.28</b>	<b>516.79</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.3233 in	S <sub>top</sub> =	80.41 in <sup>3</sup>	y-bar =	6.3233 in	S <sub>top</sub> =	80.41 in <sup>3</sup>
I <sub>x</sub> =	516.79 in <sup>4</sup>	S <sub>bott.</sub> =	81.73 in <sup>3</sup>	I <sub>x</sub> =	516.79 in <sup>4</sup>	S <sub>bott.</sub> =	81.73 in <sup>3</sup>
C <sub>top</sub> =	6.4267 in	A =	20.8591 in <sup>2</sup>	C <sub>top</sub> =	6.4267 in	A =	20.8591 in <sup>2</sup>
C <sub>bottom</sub> =	6.3233 in	r <sub>x</sub> =	4.9775 in	C <sub>bottom</sub> =	6.3233 in	r <sub>x</sub> =	4.9775 in
J =	2.0295 in <sup>4</sup>	Z =	93.83 in <sup>3</sup>			Z =	93.83 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web	4.5761	4.1975	19.2081	0.0595	0.9025	3.7272	3.7867
2 (Left)	Horizontal Leg	1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg	3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg	1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg	3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate	0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>		<b>20.86</b>		<b>87.56</b>	<b>62.57</b>		<b>39.16</b>	<b>101.72</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.1000 in	S <sub>right</sub> =	19.95 in <sup>3</sup>	x-bar =	5.1000 in	S <sub>right</sub> =	19.95 in <sup>3</sup>
I <sub>y</sub> =	101.72 in <sup>4</sup>	S <sub>left</sub> =	19.95 in <sup>3</sup>	I <sub>y</sub> =	101.72 in <sup>4</sup>	S <sub>left</sub> =	19.95 in <sup>3</sup>
C <sub>right</sub> =	5.1000 in	A =	20.8591 in <sup>2</sup>	C <sub>right</sub> =	5.1000 in	A =	20.8591 in <sup>2</sup>
C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.2083 in	C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.2083 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	281.49 k-ft	281.49 k-ft
V	210.39 k	210.39 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	14.3750 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	14.8750 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

**Coped Stringer S2-4 @ FB H9**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	14.5425	98.6418	0.2500	7.2909	360.5703	360.8203
	Web	5.4155	7.3550	39.8306	84.8258	0.1034	0.0580	84.8838
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	7.0016	171.5760	171.6489
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.2516	108.4541	126.4541
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.7516	0.0000	0.0000
<b>Total</b>		<b>21.70</b>		<b>157.35</b>	<b>103.15</b>		<b>640.66</b>	<b>743.81</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	7.2516	in	S <sub>top</sub> =	97.57	in <sup>3</sup>	y-bar =	7.2516	in	S <sub>top</sub> =	97.57	in <sup>3</sup>
I <sub>x</sub> =	743.81	in <sup>4</sup>	S <sub>bottom</sub> =	102.57	in <sup>3</sup>	I <sub>x</sub> =	743.81	in <sup>4</sup>	S <sub>bottom</sub> =	102.57	in <sup>3</sup>
C <sub>top</sub> =	7.6234	in	A =	21.6985	in <sup>2</sup>	C <sub>top</sub> =	7.6234	in	A =	21.6985	in <sup>2</sup>
C <sub>bottom</sub> =	7.2516	in	r <sub>x</sub> =	5.8549	in	C <sub>bottom</sub> =	7.2516	in	r <sub>x</sub> =	5.8549	in
J =	2.0732	in <sup>4</sup>	Z =	114.87	in <sup>3</sup>	Z =	114.87	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		5.4155	4.1975	22.7314	0.0704	0.9025	4.4109	4.4813
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.70</b>		<b>91.08</b>	<b>62.58</b>		<b>39.84</b>	<b>102.42</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.1000	in	S <sub>right</sub> =	20.08	in <sup>3</sup>	x-bar =	5.1000	in	S <sub>right</sub> =	20.08	in <sup>3</sup>
I <sub>y</sub> =	102.42	in <sup>4</sup>	S <sub>left</sub> =	20.08	in <sup>3</sup>	I <sub>y</sub> =	102.42	in <sup>4</sup>	S <sub>left</sub> =	20.08	in <sup>3</sup>
C <sub>right</sub> =	5.1000	in	A =	21.6985	in <sup>2</sup>	C <sub>right</sub> =	5.1000	in	A =	21.6985	in <sup>2</sup>
C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1726	in	C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1726	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	344.61 k-ft	344.61 k-ft
V	227.91 k	227.91 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	14.3750 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	H =	14.8750 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

Coped Stringer S2-4 @ FB H10

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	14.5425	98.6418	0.2500	7.2909	360.5703	360.8203
	Web	5.4155	7.3550	39.8306	84.8258	0.1034	0.0580	84.8838
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	7.0016	171.5760	171.6489
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.2516	108.4541	126.4541
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.7516	0.0000	0.0000
<b>Total</b>		<b>21.70</b>		<b>157.35</b>	<b>103.15</b>		<b>640.66</b>	<b>743.81</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	7.2516 in	S <sub>top</sub> =	97.57 in <sup>3</sup>	y-bar =	7.2516 in	S <sub>top</sub> =	97.57 in <sup>3</sup>
I <sub>x</sub> =	743.81 in <sup>4</sup>	S <sub>bottom</sub> =	102.57 in <sup>3</sup>	I <sub>x</sub> =	743.81 in <sup>4</sup>	S <sub>bottom</sub> =	102.57 in <sup>3</sup>
C <sub>top</sub> =	7.6234 in	A =	21.6985 in <sup>2</sup>	C <sub>top</sub> =	7.6234 in	A =	21.6985 in <sup>2</sup>
C <sub>bottom</sub> =	7.2516 in	r <sub>x</sub> =	5.8549 in	C <sub>bottom</sub> =	7.2516 in	r <sub>x</sub> =	5.8549 in
J =	2.0732 in <sup>4</sup>	Z =	114.87 in <sup>3</sup>	Z =	114.87 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		5.4155	4.1975	22.7314	0.0704	0.9025	4.4109	4.4813
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.70</b>		<b>91.08</b>	<b>62.58</b>		<b>39.84</b>	<b>102.42</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.1000 in	S <sub>right</sub> =	20.08 in <sup>3</sup>	x-bar =	5.1000 in	S <sub>right</sub> =	20.08 in <sup>3</sup>
I <sub>y</sub> =	102.42 in <sup>4</sup>	S <sub>left</sub> =	20.08 in <sup>3</sup>	I <sub>y</sub> =	102.42 in <sup>4</sup>	S <sub>left</sub> =	20.08 in <sup>3</sup>
C <sub>right</sub> =	5.1000 in	A =	21.6985 in <sup>2</sup>	C <sub>right</sub> =	5.1000 in	A =	21.6985 in <sup>2</sup>
C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.1726 in	C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.1726 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	344.61 k-ft	344.61 k-ft
V	227.91 k	227.91 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section





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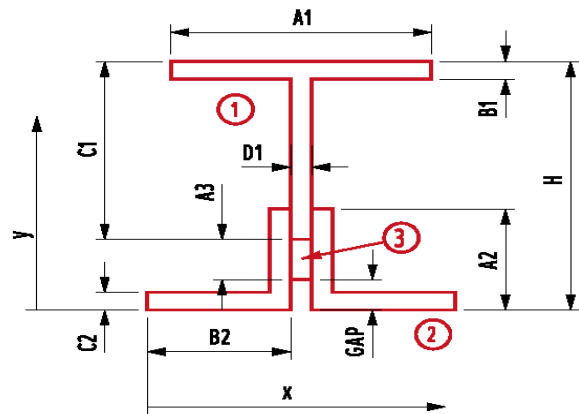
Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	14.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	15.0000 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

Coped Stringer S2-4 @ FB H11

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	14.6675	99.4897	0.2500	7.3610	367.5345	367.7845
	Web	5.4648	7.4175	40.5353	87.1672	0.1110	0.0674	87.2346
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	7.0565	174.2786	174.3515
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.3065	111.2745	129.2745
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.8065	0.0000	0.0000
<b>Total</b>		<b>21.75</b>		<b>158.90</b>	<b>105.49</b>		<b>653.15</b>	<b>758.65</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	7.3065	in	S <sub>top</sub> =	98.61	in <sup>3</sup>	y-bar =	7.3065	in	S <sub>top</sub> =	98.61	in <sup>3</sup>
I <sub>x</sub> =	758.65	in <sup>4</sup>	S <sub>bottom</sub> =	103.83	in <sup>3</sup>	I <sub>x</sub> =	758.65	in <sup>4</sup>	S <sub>bottom</sub> =	103.83	in <sup>3</sup>
C <sub>top</sub> =	7.6935	in	A =	21.7478	in <sup>2</sup>	C <sub>top</sub> =	7.6935	in	A =	21.7478	in <sup>2</sup>
C <sub>bottom</sub> =	7.3065	in	r <sub>x</sub> =	5.9062	in	C <sub>bottom</sub> =	7.3065	in	r <sub>x</sub> =	5.9062	in
J =	2.0758	in <sup>4</sup>	Z =	116.15	in <sup>3</sup>	Z =	116.15	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		5.4648	4.1975	22.9386	0.0711	0.9025	4.4511	4.5222
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.75</b>		<b>91.29</b>	<b>62.58</b>		<b>39.88</b>	<b>102.46</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.1000	in	S <sub>right</sub> =	20.09	in <sup>3</sup>	x-bar =	5.1000	in	S <sub>right</sub> =	20.09	in <sup>3</sup>
I <sub>y</sub> =	102.46	in <sup>4</sup>	S <sub>left</sub> =	20.09	in <sup>3</sup>	I <sub>y</sub> =	102.46	in <sup>4</sup>	S <sub>left</sub> =	20.09	in <sup>3</sup>
C <sub>right</sub> =	5.1000	in	A =	21.7478	in <sup>2</sup>	C <sub>right</sub> =	5.1000	in	A =	21.7478	in <sup>2</sup>
C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1705	in	C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1705	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	348.45 k-ft	348.45 k-ft
V	228.95 k	228.95 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	13.0000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	H =	13.4375 in
$B_3 = t =$	0.3950 in	Gap =	0.4375 in

Coped Stringer S2-4 @ FB H12

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	13.1050	88.8912	0.2500	6.4897	285.6780	285.9279
	Web	4.8723	6.6050	32.1817	61.7779	0.0103	0.0005	61.7784
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.3653	141.8078	141.8807
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.6153	78.4205	96.4205
3	Additional Plate	0.0000	0.4375	0.0000	0.0000	6.1778	0.0000	0.0000
<b>Total</b>		<b>21.16</b>		<b>139.95</b>	<b>80.10</b>		<b>505.91</b>	<b>586.01</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.6153 in	S <sub>top</sub> =	85.90 in <sup>3</sup>	y-bar =	6.6153 in	S <sub>top</sub> =	85.90 in <sup>3</sup>
I <sub>x</sub> =	586.01 in <sup>4</sup>	S <sub>bottom</sub> =	88.58 in <sup>3</sup>	I <sub>x</sub> =	586.01 in <sup>4</sup>	S <sub>bottom</sub> =	88.58 in <sup>3</sup>
C <sub>top</sub> =	6.8222 in	A =	21.1553 in <sup>2</sup>	C <sub>top</sub> =	6.8222 in	A =	21.1553 in <sup>2</sup>
C <sub>bottom</sub> =	6.6153 in	r <sub>x</sub> =	5.2631 in	C <sub>bottom</sub> =	6.6153 in	r <sub>x</sub> =	5.2631 in
J =	2.0449 in <sup>4</sup>	Z =	100.59 in <sup>3</sup>			Z =	100.59 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		4.8723	4.1975	20.4516	0.0634	0.9025	3.9685	4.0319
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.16</b>		<b>88.80</b>	<b>62.57</b>		<b>39.40</b>	<b>101.97</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.1000 in	S <sub>right</sub> =	19.99 in <sup>3</sup>	x-bar =	5.1000 in	S <sub>right</sub> =	19.99 in <sup>3</sup>
I <sub>y</sub> =	101.97 in <sup>4</sup>	S <sub>left</sub> =	19.99 in <sup>3</sup>	I <sub>y</sub> =	101.97 in <sup>4</sup>	S <sub>left</sub> =	19.99 in <sup>3</sup>
C <sub>right</sub> =	5.1000 in	A =	21.1553 in <sup>2</sup>	C <sub>right</sub> =	5.1000 in	A =	21.1553 in <sup>2</sup>
C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.1954 in	C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.1954 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	301.77 k-ft	301.77 k-ft
V	216.57 k	216.57 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	14.0000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	14.4375 in
$B_3 = t =$	0.3950 in	Gap =	0.4375 in

**Coped Stringer S3-4 @ FB H9**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	14.1050	95.6742	0.2500	7.0530	337.4161	337.6660
	Web	5.2673	7.1050	37.4243	78.0540	0.0530	0.0148	78.0687
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.8020	161.9367	162.0096
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.0520	98.5137	116.5137
3	Additional Plate	0.0000	0.4375	0.0000	0.0000	6.6145	0.0000	0.0000
<b>Total</b>		<b>21.55</b>		<b>151.97</b>	<b>96.38</b>		<b>597.88</b>	<b>694.26</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	7.0520	in	S <sub>top</sub> =	94.00	in <sup>3</sup>	y-bar =	7.0520	in	S <sub>top</sub> =	94.00	in <sup>3</sup>
I <sub>x</sub> =	694.26	in <sup>4</sup>	S <sub>bottom</sub> =	98.45	in <sup>3</sup>	I <sub>x</sub> =	694.26	in <sup>4</sup>	S <sub>bottom</sub> =	98.45	in <sup>3</sup>
C <sub>top</sub> =	7.3855	in	A =	21.5503	in <sup>2</sup>	C <sub>top</sub> =	7.3855	in	A =	21.5503	in <sup>2</sup>
C <sub>bottom</sub> =	7.0520	in	r <sub>x</sub> =	5.6759	in	C <sub>bottom</sub> =	7.0520	in	r <sub>x</sub> =	5.6759	in
J =	2.0655	in <sup>4</sup>	Z =	110.53	in <sup>3</sup>	Z =	110.53	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		5.2673	4.1975	22.1096	0.0685	0.9025	4.2903	4.3588
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.55</b>		<b>90.46</b>	<b>62.58</b>		<b>39.72</b>	<b>102.30</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.1000	in	S <sub>right</sub> =	20.06	in <sup>3</sup>	x-bar =	5.1000	in	S <sub>right</sub> =	20.06	in <sup>3</sup>
I <sub>y</sub> =	102.30	in <sup>4</sup>	S <sub>left</sub> =	20.06	in <sup>3</sup>	I <sub>y</sub> =	102.30	in <sup>4</sup>	S <sub>left</sub> =	20.06	in <sup>3</sup>
C <sub>right</sub> =	5.1000	in	A =	21.5503	in <sup>2</sup>	C <sub>right</sub> =	5.1000	in	A =	21.5503	in <sup>2</sup>
C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1787	in	C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1787	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	331.59 k-ft	331.59 k-ft
V	224.82 k	224.82 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



Made By CTG  
Checked By DMP

Date 3/19/2012  
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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	13.3750 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	13.8750 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

Coped Stringer S3-4 @ FB H10

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	13.5425	91.8588	0.2500	6.7291	307.1394	307.3894
	Web	5.0205	6.8550	34.4152	67.5853	0.0416	0.0087	67.5940
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.5634	150.7738	150.8468
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.8134	87.2522	105.2522
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.3134	0.0000	0.0000
<b>Total</b>		<b>21.30</b>		<b>145.15</b>	<b>85.91</b>		<b>545.17</b>	<b>631.08</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.8134 in	S <sub>top</sub> =	89.37 in <sup>3</sup>	y-bar =	6.8134 in	S <sub>top</sub> =	89.37 in <sup>3</sup>
I <sub>x</sub> =	631.08 in <sup>4</sup>	S <sub>bottom</sub> =	92.62 in <sup>3</sup>	I <sub>x</sub> =	631.08 in <sup>4</sup>	S <sub>bottom</sub> =	92.62 in <sup>3</sup>
C <sub>top</sub> =	7.0616 in	A =	21.3035 in <sup>2</sup>	C <sub>top</sub> =	7.0616 in	A =	21.3035 in <sup>2</sup>
C <sub>bottom</sub> =	6.8134 in	r <sub>x</sub> =	5.4427 in	C <sub>bottom</sub> =	6.8134 in	r <sub>x</sub> =	5.4427 in
J =	2.0526 in <sup>4</sup>	Z =	104.78 in <sup>3</sup>	Z =	104.78 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		5.0205	4.1975	21.0733	0.0653	0.9025	4.0892	4.1545
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.30</b>		<b>89.42</b>	<b>62.57</b>		<b>39.52</b>	<b>102.09</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.1000 in	S <sub>right</sub> =	20.02 in <sup>3</sup>	x-bar =	5.1000 in	S <sub>right</sub> =	20.02 in <sup>3</sup>
I <sub>y</sub> =	102.09 in <sup>4</sup>	S <sub>left</sub> =	20.02 in <sup>3</sup>	I <sub>y</sub> =	102.09 in <sup>4</sup>	S <sub>left</sub> =	20.02 in <sup>3</sup>
C <sub>right</sub> =	5.1000 in	A =	21.3035 in <sup>2</sup>	C <sub>right</sub> =	5.1000 in	A =	21.3035 in <sup>2</sup>
C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.1891 in	C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.1891 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	314.34 k-ft	314.34 k-ft
V	219.67 k	219.67 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





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Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	13.0000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	13.5000 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

Coped Stringer S3-4 @ FB H11

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	13.1675	89.3152	0.2500	6.5178	288.1543	288.4042
	Web	4.8723	6.6675	32.4862	61.7779	0.0178	0.0015	61.7795
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.3997	143.3462	143.4191
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.6497	79.9215	97.9215
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.1497	0.0000	0.0000
<b>Total</b>		<b>21.16</b>		<b>140.68</b>	<b>80.10</b>		<b>511.42</b>	<b>591.52</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.6497 in	S <sub>top</sub> =	86.35 in <sup>3</sup>	y-bar =	6.6497 in	S <sub>top</sub> =	86.35 in <sup>3</sup>
I <sub>x</sub> =	591.52 in <sup>4</sup>	S <sub>bottom</sub> =	88.96 in <sup>3</sup>	I <sub>x</sub> =	591.52 in <sup>4</sup>	S <sub>bottom</sub> =	88.96 in <sup>3</sup>
C <sub>top</sub> =	6.8503 in	A =	21.1553 in <sup>2</sup>	C <sub>top</sub> =	6.8503 in	A =	21.1553 in <sup>2</sup>
C <sub>bottom</sub> =	6.6497 in	r <sub>x</sub> =	5.2878 in	C <sub>bottom</sub> =	6.6497 in	r <sub>x</sub> =	5.2878 in
J =	2.0449 in <sup>4</sup>	Z =	101.08 in <sup>3</sup>	Z =	101.08 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		4.8723	4.1975	20.4516	0.0634	0.9025	3.9685	4.0319
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.16</b>		<b>88.80</b>	<b>62.57</b>		<b>39.40</b>	<b>101.97</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.1000 in	S <sub>right</sub> =	19.99 in <sup>3</sup>	x-bar =	5.1000 in	S <sub>right</sub> =	19.99 in <sup>3</sup>
I <sub>y</sub> =	101.97 in <sup>4</sup>	S <sub>left</sub> =	19.99 in <sup>3</sup>	I <sub>y</sub> =	101.97 in <sup>4</sup>	S <sub>left</sub> =	19.99 in <sup>3</sup>
C <sub>right</sub> =	5.1000 in	A =	21.1553 in <sup>2</sup>	C <sub>right</sub> =	5.1000 in	A =	21.1553 in <sup>2</sup>
C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.1954 in	C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.1954 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	303.24 k-ft	303.24 k-ft
V	216.57 k	216.57 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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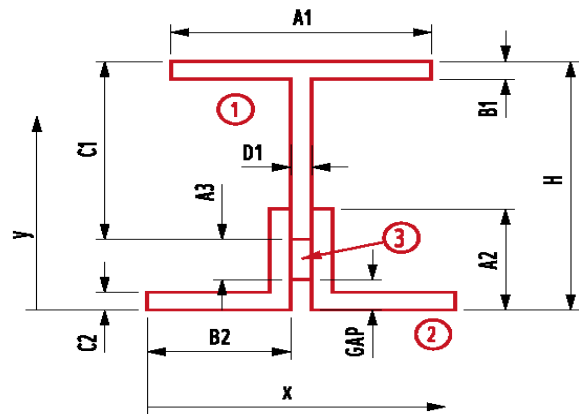
Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	12.6250 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	13.1250 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

Coped Stringer S3-4 @ FB H12

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	12.7925	86.7715	0.2500	6.3062	269.7460	269.9960
	Web	4.7242	6.4800	30.6128	56.3131	0.0063	0.0002	56.3133
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.2363	136.1207	136.1937
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.4863	72.9264	90.9264
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.9863	0.0000	0.0000
<b>Total</b>		<b>21.01</b>		<b>136.26</b>	<b>74.64</b>		<b>478.79</b>	<b>553.43</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	6.4863	in	S <sub>top</sub> =	83.36	in <sup>3</sup>	y-bar =	6.4863	in	S <sub>top</sub> =	83.36	in <sup>3</sup>
I <sub>x</sub> =	553.43	in <sup>4</sup>	S <sub>bottom</sub> =	85.32	in <sup>3</sup>	I <sub>x</sub> =	553.43	in <sup>4</sup>	S <sub>bottom</sub> =	85.32	in <sup>3</sup>
C <sub>top</sub> =	6.6387	in	A =	21.0072	in <sup>2</sup>	C <sub>top</sub> =	6.6387	in	A =	21.0072	in <sup>2</sup>
C <sub>bottom</sub> =	6.4863	in	r <sub>x</sub> =	5.1327	in	C <sub>bottom</sub> =	6.4863	in	r <sub>x</sub> =	5.1327	in
J =	2.0372	in <sup>4</sup>	Z =	97.44	in <sup>3</sup>	Z =	97.44	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		4.7242	4.1975	19.8298	0.0614	0.9025	3.8479	3.9093
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.01</b>		<b>88.18</b>	<b>62.57</b>		<b>39.28</b>	<b>101.85</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.1000	in	S <sub>right</sub> =	19.97	in <sup>3</sup>	x-bar =	5.1000	in	S <sub>right</sub> =	19.97	in <sup>3</sup>
I <sub>y</sub> =	101.85	in <sup>4</sup>	S <sub>left</sub> =	19.97	in <sup>3</sup>	I <sub>y</sub> =	101.85	in <sup>4</sup>	S <sub>left</sub> =	19.97	in <sup>3</sup>
C <sub>right</sub> =	5.1000	in	A =	21.0072	in <sup>2</sup>	C <sub>right</sub> =	5.1000	in	A =	21.0072	in <sup>2</sup>
C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.2018	in	C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.2018	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	292.32 k-ft	292.32 k-ft
V	213.48 k	213.48 k

F<sub>y</sub> = **36.00 ksi**

\*Compact Section



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	12.1875 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	H =	12.6875 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

**Coped Stringer S4-4 @ FB H9**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	12.3550	83.8040	0.2500	6.0589	249.0020	249.2520
	Web	4.5514	6.2613	28.4974	50.3566	0.0349	0.0055	50.3621
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.0461	127.9456	128.0185
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.2961	65.1875	83.1875
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.7961	0.0000	0.0000
<b>Total</b>		<b>20.83</b>		<b>131.18</b>	<b>68.68</b>		<b>442.14</b>	<b>510.82</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.2961 in	S <sub>top</sub> =	79.92 in <sup>3</sup>	y-bar =	6.2961 in	S <sub>top</sub> =	79.92 in <sup>3</sup>
I <sub>x</sub> =	510.82 in <sup>4</sup>	S <sub>bott.</sub> =	81.13 in <sup>3</sup>	I <sub>x</sub> =	510.82 in <sup>4</sup>	S <sub>bott.</sub> =	81.13 in <sup>3</sup>
C <sub>top</sub> =	6.3914 in	A =	20.8344 in <sup>2</sup>	C <sub>top</sub> =	6.3914 in	A =	20.8344 in <sup>2</sup>
C <sub>bottom</sub> =	6.2961 in	r <sub>x</sub> =	4.9516 in	C <sub>bottom</sub> =	6.2961 in	r <sub>x</sub> =	4.9516 in
J =	2.0282 in <sup>4</sup>	Z =	93.24 in <sup>3</sup>			Z =	93.24 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		4.5514	4.1975	19.1044	0.0592	0.9025	3.7071	3.7663
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>20.83</b>		<b>87.45</b>	<b>62.57</b>		<b>39.14</b>	<b>101.70</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.1000 in	S <sub>right</sub> =	19.94 in <sup>3</sup>	x-bar =	5.1000 in	S <sub>right</sub> =	19.94 in <sup>3</sup>
I <sub>y</sub> =	101.70 in <sup>4</sup>	S <sub>left</sub> =	19.94 in <sup>3</sup>	I <sub>y</sub> =	101.70 in <sup>4</sup>	S <sub>left</sub> =	19.94 in <sup>3</sup>
C <sub>right</sub> =	5.1000 in	A =	20.8344 in <sup>2</sup>	C <sub>right</sub> =	5.1000 in	A =	20.8344 in <sup>2</sup>
C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.2094 in	C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.2094 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	279.72 k-ft	279.72 k-ft
V	209.87 k	209.87 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	11.8125 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	12.3125 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

Coped Stringer S4-4 @ FB H10

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	11.9800	81.2603	0.2500	5.8465	231.8518	232.1017
	Web	4.4033	6.0738	26.7443	45.5983	0.0598	0.0157	45.6140
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.8835	121.1554	121.2283
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.1335	58.9138	76.9138
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.6335	0.0000	0.0000
<b>Total</b>		<b>20.69</b>		<b>126.88</b>	<b>63.92</b>		<b>411.94</b>	<b>475.86</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	6.1335	in	S <sub>top</sub> =	77.01	in <sup>3</sup>	y-bar =	6.1335	in	S <sub>top</sub> =	77.01	in <sup>3</sup>
I <sub>x</sub> =	475.86	in <sup>4</sup>	S <sub>bott.</sub> =	77.58	in <sup>3</sup>	I <sub>x</sub> =	475.86	in <sup>4</sup>	S <sub>bott.</sub> =	77.58	in <sup>3</sup>
C <sub>top</sub> =	6.1790	in	A =	20.6863	in <sup>2</sup>	C <sub>top</sub> =	6.1790	in	A =	20.6863	in <sup>2</sup>
C <sub>bottom</sub> =	6.1335	in	r <sub>x</sub> =	4.7962	in	C <sub>bottom</sub> =	6.1335	in	r <sub>x</sub> =	4.7962	in
J =	2.0205	in <sup>4</sup>	Z =	89.69	in <sup>3</sup>	Z =	89.69	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		4.4033	4.1975	18.4827	0.0573	0.9025	3.5865	3.6437
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>20.69</b>		<b>86.83</b>	<b>62.56</b>		<b>39.02</b>	<b>101.58</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.1000	in	S <sub>right</sub> =	19.92	in <sup>3</sup>	x-bar =	5.1000	in	S <sub>right</sub> =	19.92	in <sup>3</sup>
I <sub>y</sub> =	101.58	n <sup>4</sup>	S <sub>left</sub> =	19.92	in <sup>3</sup>	I <sub>y</sub> =	101.58	n <sup>4</sup>	S <sub>left</sub> =	19.92	in <sup>3</sup>
C <sub>right</sub> =	5.1000	in	A =	20.6863	in <sup>2</sup>	C <sub>right</sub> =	5.1000	in	A =	20.6863	in <sup>2</sup>
C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.2160	in	C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.2160	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	269.07 k-ft	269.07 k-ft
V	206.78 k	206.78 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	11.6875 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	12.1875 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

Coped Stringer S4-4 @ FB H11

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	11.8550	80.4125	0.2500	5.7756	226.2648	226.5147
	Web		4.3539	6.0113	26.1723	44.0815	0.0681	0.0202	44.1017
2	Horizontal Legs		3.5000	0.2500	0.8750	0.0729	5.8294	118.9364	119.0093
	Vertical Legs		6.0000	3.0000	18.0000	18.0000	3.0794	56.8960	74.8960
3	Additional Plate		0.0000	0.5000	0.0000	0.0000	5.5794	0.0000	0.0000
<b>Total</b>			<b>20.64</b>		<b>125.46</b>	<b>62.40</b>		<b>402.12</b>	<b>464.52</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	6.0794	in	S <sub>top</sub> =	76.05	in <sup>3</sup>	y-bar =	6.0794	in	S <sub>top</sub> =	76.05	in <sup>3</sup>
I <sub>x</sub> =	464.52	in <sup>4</sup>	S <sub>bott.</sub> =	76.41	in <sup>3</sup>	I <sub>x</sub> =	464.52	in <sup>4</sup>	S <sub>bott.</sub> =	76.41	in <sup>3</sup>
C <sub>top</sub> =	6.1081	in	A =	20.6369	in <sup>2</sup>	C <sub>top</sub> =	6.1081	in	A =	20.6369	in <sup>2</sup>
C <sub>bottom</sub> =	6.0794	in	r <sub>x</sub> =	4.7444	in	C <sub>bottom</sub> =	6.0794	in	r <sub>x</sub> =	4.7444	in
J =	2.0180	in <sup>4</sup>	Z =	88.52	in <sup>3</sup>	Z =	88.52	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web	4.3539	4.1975	18.2754	0.0566	0.9025	3.5463	3.6029
2 (Left)	Horizontal Leg	1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg	3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg	1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg	3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate	0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>		<b>20.64</b>		<b>86.62</b>	<b>62.56</b>		<b>38.98</b>	<b>101.54</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.1000	in	S <sub>right</sub> =	19.91	in <sup>3</sup>	x-bar =	5.1000	in	S <sub>right</sub> =	19.91	in <sup>3</sup>
I <sub>y</sub> =	101.54	n <sup>4</sup>	S <sub>left</sub> =	19.91	in <sup>3</sup>	I <sub>y</sub> =	101.54	n <sup>4</sup>	S <sub>left</sub> =	19.91	in <sup>3</sup>
C <sub>right</sub> =	5.1000	in	A =	20.6369	in <sup>2</sup>	C <sub>right</sub> =	5.1000	in	A =	20.6369	in <sup>2</sup>
C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.2182	in	C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.2182	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
<b>M</b>	265.56 k-ft	265.56 k-ft
<b>V</b>	205.75 k	205.75 k

<b>F<sub>y</sub> =</b>	<b>36.00 ksi</b>
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\*Compact Section



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	11.7500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	12.3125 in
$B_3 = t =$	0.3950 in	Gap =	0.5625 in

Coped Stringer S4-4 @ FB H12

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	11.9800	81.2603	0.2500	5.8398	231.3211	231.5711
	Web	4.3786	6.1050	26.7312	44.8356	0.0352	0.0054	44.8410
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.8902	121.4313	121.5042
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.1402	59.1658	77.1658
3	Additional Plate	0.0000	0.5625	0.0000	0.0000	5.5777	0.0000	0.0000
<b>Total</b>		<b>20.66</b>		<b>126.87</b>	<b>63.16</b>		<b>411.92</b>	<b>475.08</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.1402 in	S <sub>top</sub> =	76.97 in <sup>3</sup>	y-bar =	6.1402 in	S <sub>top</sub> =	76.97 in <sup>3</sup>
I <sub>x</sub> =	475.08 in <sup>4</sup>	S <sub>bott.</sub> =	77.37 in <sup>3</sup>	I <sub>x</sub> =	475.08 in <sup>4</sup>	S <sub>bott.</sub> =	77.37 in <sup>3</sup>
C <sub>top</sub> =	6.1723 in	A =	20.6616 in <sup>2</sup>	C <sub>top</sub> =	6.1723 in	A =	20.6616 in <sup>2</sup>
C <sub>bottom</sub> =	6.1402 in	r <sub>x</sub> =	4.7952 in	C <sub>bottom</sub> =	6.1402 in	r <sub>x</sub> =	4.7952 in
J =	2.0193 in <sup>4</sup>	Z =	89.58 in <sup>3</sup>	Z =	89.58 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		4.3786	4.1975	18.3791	0.0569	0.9025	3.5664	3.6233
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>20.66</b>		<b>86.73</b>	<b>62.56</b>		<b>39.00</b>	<b>101.56</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.1000 in	S <sub>right</sub> =	19.91 in <sup>3</sup>	x-bar =	5.1000 in	S <sub>right</sub> =	19.91 in <sup>3</sup>
I <sub>y</sub> =	101.56 in <sup>4</sup>	S <sub>left</sub> =	19.91 in <sup>3</sup>	I <sub>y</sub> =	101.56 in <sup>4</sup>	S <sub>left</sub> =	19.91 in <sup>3</sup>
C <sub>right</sub> =	5.1000 in	A =	20.6616 in <sup>2</sup>	C <sub>right</sub> =	5.1000 in	A =	20.6616 in <sup>2</sup>
C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.2171 in	C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.2171 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	268.74 k-ft	268.74 k-ft
V	206.26 k	206.26 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	13.0000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	13.5000 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

**Coped Stringer S5-4 @ FB H9**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	13.1675	89.3152	0.2500	6.5178	288.1543	288.4042
	Web	4.8723	6.6675	32.4862	61.7779	0.0178	0.0015	61.7795
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.3997	143.3462	143.4191
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.6497	79.9215	97.9215
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.1497	0.0000	0.0000
<b>Total</b>		<b>21.16</b>		<b>140.68</b>	<b>80.10</b>		<b>511.42</b>	<b>591.52</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.6497 in	S <sub>top</sub> =	86.35 in <sup>3</sup>	y-bar =	6.6497 in	S <sub>top</sub> =	86.35 in <sup>3</sup>
I <sub>x</sub> =	591.52 in <sup>4</sup>	S <sub>bott.</sub> =	88.96 in <sup>3</sup>	I <sub>x</sub> =	591.52 in <sup>4</sup>	S <sub>bott.</sub> =	88.96 in <sup>3</sup>
C <sub>top</sub> =	6.8503 in	A =	21.1553 in <sup>2</sup>	C <sub>top</sub> =	6.8503 in	A =	21.1553 in <sup>2</sup>
C <sub>bottom</sub> =	6.6497 in	r <sub>x</sub> =	5.2878 in	C <sub>bottom</sub> =	6.6497 in	r <sub>x</sub> =	5.2878 in
J =	2.0449 in <sup>4</sup>	Z =	101.08 in <sup>3</sup>			Z =	101.08 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		4.8723	4.1975	20.4516	0.0634	0.9025	3.9685	4.0319
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.16</b>		<b>88.80</b>	<b>62.57</b>		<b>39.40</b>	<b>101.97</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.1000 in	S <sub>right</sub> =	19.99 in <sup>3</sup>	x-bar =	5.1000 in	S <sub>right</sub> =	19.99 in <sup>3</sup>
I <sub>y</sub> =	101.97 in <sup>4</sup>	S <sub>left</sub> =	19.99 in <sup>3</sup>	I <sub>y</sub> =	101.97 in <sup>4</sup>	S <sub>left</sub> =	19.99 in <sup>3</sup>
C <sub>right</sub> =	5.1000 in	A =	21.1553 in <sup>2</sup>	C <sub>right</sub> =	5.1000 in	A =	21.1553 in <sup>2</sup>
C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.1954 in	C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.1954 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	303.24 k-ft	303.24 k-ft
V	216.57 k	216.57 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



Made By CTG  
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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	12.7500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	13.2500 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

Coped Stringer S5-4 @ FB H10

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	12.9175	87.6194	0.2500	6.3768	275.8179	276.0678
	Web	4.7736	6.5425	31.2311	58.0973	0.0018	0.0000	58.0973
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.2907	138.5068	138.5797
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.5407	75.2209	93.2209
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.0407	0.0000	0.0000
<b>Total</b>		<b>21.06</b>		<b>137.73</b>	<b>76.42</b>		<b>489.55</b>	<b>565.97</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	6.5407	in	S <sub>top</sub> =	84.36	in <sup>3</sup>	y-bar =	6.5407	in	S <sub>top</sub> =	84.36	in <sup>3</sup>
I <sub>x</sub> =	565.97	in <sup>4</sup>	S <sub>bottom</sub> =	86.53	in <sup>3</sup>	I <sub>x</sub> =	565.97	in <sup>4</sup>	S <sub>bottom</sub> =	86.53	in <sup>3</sup>
C <sub>top</sub> =	6.7093	in	A =	21.0566	in <sup>2</sup>	C <sub>top</sub> =	6.7093	in	A =	21.0566	in <sup>2</sup>
C <sub>bottom</sub> =	6.5407	in	r <sub>x</sub> =	5.1844	in	C <sub>bottom</sub> =	6.5407	in	r <sub>x</sub> =	5.1844	in
J =	2.0398	in <sup>4</sup>	Z =	98.65	in <sup>3</sup>	Z =	98.65	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		4.7736	4.1975	20.0371	0.0621	0.9025	3.8881	3.9502
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.06</b>		<b>88.38</b>	<b>62.57</b>		<b>39.32</b>	<b>101.89</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.1000	in	S <sub>right</sub> =	19.98	in <sup>3</sup>	x-bar =	5.1000	in	S <sub>right</sub> =	19.98	in <sup>3</sup>
I <sub>y</sub> =	101.89	in <sup>4</sup>	S <sub>left</sub> =	19.98	in <sup>3</sup>	I <sub>y</sub> =	101.89	in <sup>4</sup>	S <sub>left</sub> =	19.98	in <sup>3</sup>
C <sub>right</sub> =	5.1000	in	A =	21.0566	in <sup>2</sup>	C <sub>right</sub> =	5.1000	in	A =	21.0566	in <sup>2</sup>
C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1997	in	C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1997	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	295.95 k-ft	295.95 k-ft
V	214.51 k	214.51 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





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Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	12.7500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	13.2500 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

Coped Stringer S5-4 @ FB H11

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	12.9175	87.6194	0.2500	6.3768	275.8179	276.0678
	Web	4.7736	6.5425	31.2311	58.0973	0.0018	0.0000	58.0973
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.2907	138.5068	138.5797
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.5407	75.2209	93.2209
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.0407	0.0000	0.0000
<b>Total</b>		<b>21.06</b>		<b>137.73</b>	<b>76.42</b>		<b>489.55</b>	<b>565.97</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	6.5407	in	S <sub>top</sub> =	84.36	in <sup>3</sup>	y-bar =	6.5407	in	S <sub>top</sub> =	84.36	in <sup>3</sup>
I <sub>x</sub> =	565.97	in <sup>4</sup>	S <sub>bottom</sub> =	86.53	in <sup>3</sup>	I <sub>x</sub> =	565.97	in <sup>4</sup>	S <sub>bottom</sub> =	86.53	in <sup>3</sup>
C <sub>top</sub> =	6.7093	in	A =	21.0566	in <sup>2</sup>	C <sub>top</sub> =	6.7093	in	A =	21.0566	in <sup>2</sup>
C <sub>bottom</sub> =	6.5407	in	r <sub>x</sub> =	5.1844	in	C <sub>bottom</sub> =	6.5407	in	r <sub>x</sub> =	5.1844	in
J =	2.0398	in <sup>4</sup>	Z =	98.65	in <sup>3</sup>	Z =	98.65	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		4.7736	4.1975	20.0371	0.0621	0.9025	3.8881	3.9502
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.06</b>		<b>88.38</b>	<b>62.57</b>		<b>39.32</b>	<b>101.89</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.1000	in	S <sub>right</sub> =	19.98	in <sup>3</sup>	x-bar =	5.1000	in	S <sub>right</sub> =	19.98	in <sup>3</sup>
I <sub>y</sub> =	101.89	in <sup>4</sup>	S <sub>left</sub> =	19.98	in <sup>3</sup>	I <sub>y</sub> =	101.89	in <sup>4</sup>	S <sub>left</sub> =	19.98	in <sup>3</sup>
C <sub>right</sub> =	5.1000	in	A =	21.0566	in <sup>2</sup>	C <sub>right</sub> =	5.1000	in	A =	21.0566	in <sup>2</sup>
C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1997	in	C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1997	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	295.95 k-ft	295.95 k-ft
V	214.51 k	214.51 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	12.5000 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	13.0000 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

Coped Stringer S5-4 @ FB H12

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	12.6675	85.9237	0.2500	6.2356	263.7385	263.9885
	Web	4.6748	6.4175	30.0007	54.5658	0.0144	0.0010	54.5668
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.1819	133.7571	133.8300
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.4319	70.6690	88.6690
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.9319	0.0000	0.0000
<b>Total</b>		<b>20.96</b>		<b>134.80</b>	<b>72.89</b>		<b>468.17</b>	<b>541.05</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.4319 in	S <sub>top</sub> =	82.38 in <sup>3</sup>	y-bar =	6.4319 in	S <sub>top</sub> =	82.38 in <sup>3</sup>
I <sub>x</sub> =	541.05 in <sup>4</sup>	S <sub>bott.</sub> =	84.12 in <sup>3</sup>	I <sub>x</sub> =	541.05 in <sup>4</sup>	S <sub>bott.</sub> =	84.12 in <sup>3</sup>
C <sub>top</sub> =	6.5681 in	A =	20.9578 in <sup>2</sup>	C <sub>top</sub> =	6.5681 in	A =	20.9578 in <sup>2</sup>
C <sub>bottom</sub> =	6.4319 in	r <sub>x</sub> =	5.0810 in	C <sub>bottom</sub> =	6.4319 in	r <sub>x</sub> =	5.0810 in
J =	2.0347 in <sup>4</sup>	Z =	96.23 in <sup>3</sup>			Z =	96.23 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		4.6748	4.1975	19.6226	0.0608	0.9025	3.8077	3.8685
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>20.96</b>		<b>87.97</b>	<b>62.57</b>		<b>39.24</b>	<b>101.81</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.1000 in	S <sub>right</sub> =	19.96 in <sup>3</sup>	x-bar =	5.1000 in	S <sub>right</sub> =	19.96 in <sup>3</sup>
I <sub>y</sub> =	101.81 in <sup>4</sup>	S <sub>left</sub> =	19.96 in <sup>3</sup>	I <sub>y</sub> =	101.81 in <sup>4</sup>	S <sub>left</sub> =	19.96 in <sup>3</sup>
C <sub>right</sub> =	5.1000 in	A =	20.9578 in <sup>2</sup>	C <sub>right</sub> =	5.1000 in	A =	20.9578 in <sup>2</sup>
C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.2040 in	C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.2040 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	288.69 k-ft	288.69 k-ft
V	212.45 k	212.45 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



Made By CTG  
Checked By DMP

Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	13.2500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	13.7500 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

**Coped Stringer S6-4 @ FB H9**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	13.4175	91.0109	0.2500	6.6587	300.7471	300.9970
	Web	4.9711	6.7925	33.7660	65.6108	0.0337	0.0056	65.6165
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.5088	148.2754	148.3483
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.7588	84.7712	102.7712
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.2588	0.0000	0.0000
<b>Total</b>		<b>21.25</b>		<b>143.65</b>	<b>83.93</b>		<b>533.80</b>	<b>617.73</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.7588 in	S <sub>top</sub> =	88.36 in <sup>3</sup>	y-bar =	6.7588 in	S <sub>top</sub> =	88.36 in <sup>3</sup>
I <sub>x</sub> =	617.73 in <sup>4</sup>	S <sub>bott.</sub> =	91.40 in <sup>3</sup>	I <sub>x</sub> =	617.73 in <sup>4</sup>	S <sub>bott.</sub> =	91.40 in <sup>3</sup>
C <sub>top</sub> =	6.9912 in	A =	21.2541 in <sup>2</sup>	C <sub>top</sub> =	6.9912 in	A =	21.2541 in <sup>2</sup>
C <sub>bottom</sub> =	6.7588 in	r <sub>x</sub> =	5.3911 in	C <sub>bottom</sub> =	6.7588 in	r <sub>x</sub> =	5.3911 in
J =	2.0501 in <sup>4</sup>	Z =	103.54 in <sup>3</sup>	Z =	103.54 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		4.9711	4.1975	20.8661	0.0646	0.9025	4.0490	4.1136
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.25</b>		<b>89.21</b>	<b>62.57</b>		<b>39.48</b>	<b>102.05</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.1000 in	S <sub>right</sub> =	20.01 in <sup>3</sup>	x-bar =	5.1000 in	S <sub>right</sub> =	20.01 in <sup>3</sup>
I <sub>y</sub> =	102.05 in <sup>4</sup>	S <sub>left</sub> =	20.01 in <sup>3</sup>	I <sub>y</sub> =	102.05 in <sup>4</sup>	S <sub>left</sub> =	20.01 in <sup>3</sup>
C <sub>right</sub> =	5.1000 in	A =	21.2541 in <sup>2</sup>	C <sub>right</sub> =	5.1000 in	A =	21.2541 in <sup>2</sup>
C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.1912 in	C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.1912 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	310.62 k-ft	310.62 k-ft
V	218.64 k	218.64 k

F<sub>y</sub> = 36.00 ksi

\*Compact Section



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	13.7500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	14.2500 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

Coped Stringer S6-4 @ FB H10

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	13.9175	94.4024	0.2500	6.9401	326.6993	326.9493
	Web	5.1686	7.0425	36.3997	73.7458	0.0651	0.0219	73.7676
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.7274	158.4046	158.4775
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.9774	94.9202	112.9202
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.4774	0.0000	0.0000
<b>Total</b>		<b>21.45</b>		<b>149.68</b>	<b>92.07</b>		<b>580.05</b>	<b>672.11</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.9774 in	S <sub>top</sub> =	92.42 in <sup>3</sup>	y-bar =	6.9774 in	S <sub>top</sub> =	92.42 in <sup>3</sup>
I <sub>x</sub> =	672.11 in <sup>4</sup>	S <sub>bott.</sub> =	96.33 in <sup>3</sup>	I <sub>x</sub> =	672.11 in <sup>4</sup>	S <sub>bott.</sub> =	96.33 in <sup>3</sup>
C <sub>top</sub> =	7.2726 in	A =	21.4516 in <sup>2</sup>	C <sub>top</sub> =	7.2726 in	A =	21.4516 in <sup>2</sup>
C <sub>bottom</sub> =	6.9774 in	r <sub>x</sub> =	5.5975 in	C <sub>bottom</sub> =	6.9774 in	r <sub>x</sub> =	5.5975 in
J =	2.0603 in <sup>4</sup>	Z =	108.52 in <sup>3</sup>			Z =	108.52 in <sup>3</sup>

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		5.1686	4.1975	21.6951	0.0672	0.9025	4.2098	4.2770
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.45</b>		<b>90.04</b>	<b>62.57</b>		<b>39.64</b>	<b>102.21</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.1000 in	S <sub>right</sub> =	20.04 in <sup>3</sup>	x-bar =	5.1000 in	S <sub>right</sub> =	20.04 in <sup>3</sup>
I <sub>y</sub> =	102.21 in <sup>4</sup>	S <sub>left</sub> =	20.04 in <sup>3</sup>	I <sub>y</sub> =	102.21 in <sup>4</sup>	S <sub>left</sub> =	20.04 in <sup>3</sup>
C <sub>right</sub> =	5.1000 in	A =	21.4516 in <sup>2</sup>	C <sub>right</sub> =	5.1000 in	A =	21.4516 in <sup>2</sup>
C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.1829 in	C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.1829 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	325.56 k-ft	325.56 k-ft
V	222.76 k	222.76 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	13.8125 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	14.3125 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

Coped Stringer S6-4 @ FB H11

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	13.9800	94.8263	0.2500	6.9752	330.0150	330.2649
	Web	5.1933	7.0738	36.7358	74.8075	0.0689	0.0247	74.8322
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.7548	159.6962	159.7691
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	4.0048	96.2311	114.2311
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.5048	0.0000	0.0000
<b>Total</b>		<b>21.48</b>		<b>150.44</b>	<b>93.13</b>		<b>585.97</b>	<b>679.10</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	7.0048	in	S <sub>top</sub> =	92.93	in <sup>3</sup>	y-bar =	7.0048	in	S <sub>top</sub> =	92.93	in <sup>3</sup>
I <sub>x</sub> =	679.10	in <sup>4</sup>	S <sub>bottom</sub> =	96.95	in <sup>3</sup>	I <sub>x</sub> =	679.10	in <sup>4</sup>	S <sub>bottom</sub> =	96.95	in <sup>3</sup>
C <sub>top</sub> =	7.3077	in	A =	21.4763	in <sup>2</sup>	C <sub>top</sub> =	7.3077	in	A =	21.4763	in <sup>2</sup>
C <sub>bottom</sub> =	7.0048	in	r <sub>x</sub> =	5.6232	in	C <sub>bottom</sub> =	7.0048	in	r <sub>x</sub> =	5.6232	in
J =	2.0616	in <sup>4</sup>	Z =	109.15	in <sup>3</sup>	Z =	109.15	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		5.1933	4.1975	21.7987	0.0675	0.9025	4.2299	4.2975
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.48</b>		<b>90.15</b>	<b>62.57</b>		<b>39.66</b>	<b>102.23</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.1000	in	S <sub>right</sub> =	20.05	in <sup>3</sup>	x-bar =	5.1000	in	S <sub>right</sub> =	20.05	in <sup>3</sup>
I <sub>y</sub> =	102.23	in <sup>4</sup>	S <sub>left</sub> =	20.05	in <sup>3</sup>	I <sub>y</sub> =	102.23	in <sup>4</sup>	S <sub>left</sub> =	20.05	in <sup>3</sup>
C <sub>right</sub> =	5.1000	in	A =	21.4763	in <sup>2</sup>	C <sub>right</sub> =	5.1000	in	A =	21.4763	in <sup>2</sup>
C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1818	in	C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1818	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	327.45 k-ft	327.45 k-ft
V	223.28 k	223.28 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	12.7500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	13.2500 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

Coped Stringer S6-4 @ FB H12

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	12.9175	87.6194	0.2500	6.3768	275.8179	276.0678
	Web	4.7736	6.5425	31.2311	58.0973	0.0018	0.0000	58.0973
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.2907	138.5068	138.5797
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.5407	75.2209	93.2209
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	6.0407	0.0000	0.0000
<b>Total</b>		<b>21.06</b>		<b>137.73</b>	<b>76.42</b>		<b>489.55</b>	<b>565.97</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	6.5407	in	S <sub>top</sub> =	84.36	in <sup>3</sup>	y-bar =	6.5407	in	S <sub>top</sub> =	84.36	in <sup>3</sup>
I <sub>x</sub> =	565.97	in <sup>4</sup>	S <sub>bottom</sub> =	86.53	in <sup>3</sup>	I <sub>x</sub> =	565.97	in <sup>4</sup>	S <sub>bottom</sub> =	86.53	in <sup>3</sup>
C <sub>top</sub> =	6.7093	in	A =	21.0566	in <sup>2</sup>	C <sub>top</sub> =	6.7093	in	A =	21.0566	in <sup>2</sup>
C <sub>bottom</sub> =	6.5407	in	r <sub>x</sub> =	5.1844	in	C <sub>bottom</sub> =	6.5407	in	r <sub>x</sub> =	5.1844	in
J =	2.0398	in <sup>4</sup>	Z =	98.65	in <sup>3</sup>	Z =	98.65	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web	4.7736	4.1975	20.0371	0.0621	0.9025	3.8881	3.9502
2 (Left)	Horizontal Leg	1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg	3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg	1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg	3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate	0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>		<b>21.06</b>		<b>88.38</b>	<b>62.57</b>		<b>39.32</b>	<b>101.89</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.1000	in	S <sub>right</sub> =	19.98	in <sup>3</sup>	x-bar =	5.1000	in	S <sub>right</sub> =	19.98	in <sup>3</sup>
I <sub>y</sub> =	101.89	in <sup>4</sup>	S <sub>left</sub> =	19.98	in <sup>3</sup>	I <sub>y</sub> =	101.89	in <sup>4</sup>	S <sub>left</sub> =	19.98	in <sup>3</sup>
C <sub>right</sub> =	5.1000	in	A =	21.0566	in <sup>2</sup>	C <sub>right</sub> =	5.1000	in	A =	21.0566	in <sup>2</sup>
C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1997	in	C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.1997	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	295.95 k-ft	295.95 k-ft
V	214.51 k	214.51 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



Made By CTG  
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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	12.1875 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	12.6875 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

**Coped Stringer S7-4 @ FB H9**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	12.3550	83.8040	0.2500	6.0589	249.0020	249.2520
	Web	4.5514	6.2613	28.4974	50.3566	0.0349	0.0055	50.3621
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.0461	127.9456	128.0185
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.2961	65.1875	83.1875
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.7961	0.0000	0.0000
<b>Total</b>		<b>20.83</b>		<b>131.18</b>	<b>68.68</b>		<b>442.14</b>	<b>510.82</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.2961 in	S <sub>top</sub> =	79.92 in <sup>3</sup>	y-bar =	6.2961 in	S <sub>top</sub> =	79.92 in <sup>3</sup>
I <sub>x</sub> =	510.82 in <sup>4</sup>	S <sub>bott.</sub> =	81.13 in <sup>3</sup>	I <sub>x</sub> =	510.82 in <sup>4</sup>	S <sub>bott.</sub> =	81.13 in <sup>3</sup>
C <sub>top</sub> =	6.3914 in	A =	20.8344 in <sup>2</sup>	C <sub>top</sub> =	6.3914 in	A =	20.8344 in <sup>2</sup>
C <sub>bottom</sub> =	6.2961 in	r <sub>x</sub> =	4.9516 in	C <sub>bottom</sub> =	6.2961 in	r <sub>x</sub> =	4.9516 in
J =	2.0282 in <sup>4</sup>	Z =	93.24 in <sup>3</sup>	Z =	93.24 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		4.5514	4.1975	19.1044	0.0592	0.9025	3.7071	3.7663
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>20.83</b>		<b>87.45</b>	<b>62.57</b>		<b>39.14</b>	<b>101.70</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.1000 in	S <sub>right</sub> =	19.94 in <sup>3</sup>	x-bar =	5.1000 in	S <sub>right</sub> =	19.94 in <sup>3</sup>
I <sub>y</sub> =	101.70 in <sup>4</sup>	S <sub>left</sub> =	19.94 in <sup>3</sup>	I <sub>y</sub> =	101.70 in <sup>4</sup>	S <sub>left</sub> =	19.94 in <sup>3</sup>
C <sub>right</sub> =	5.1000 in	A =	20.8344 in <sup>2</sup>	C <sub>right</sub> =	5.1000 in	A =	20.8344 in <sup>2</sup>
C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.2094 in	C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.2094 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	279.72 k-ft	279.72 k-ft
V	209.87 k	209.87 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



Made By CTG  
Checked By DMP

Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	12.2500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	12.7500 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

Coped Stringer S7-4 @ FB H10

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	12.4175	84.2279	0.2500	6.0942	251.9170	252.1670
	Web	4.5761	6.2925	28.7950	51.1804	0.0308	0.0043	51.1848
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.0733	129.0967	129.1696
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.3233	66.2653	84.2653
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.8233	0.0000	0.0000
<b>Total</b>		<b>20.86</b>		<b>131.90</b>	<b>69.50</b>		<b>447.28</b>	<b>516.79</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Checked By DMP

Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties					As-Inspected Section Properties						
y-bar =	6.3233	in	S <sub>top</sub> =	80.41	in <sup>3</sup>	y-bar =	6.3233	in	S <sub>top</sub> =	80.41	in <sup>3</sup>
I <sub>x</sub> =	516.79	in <sup>4</sup>	S <sub>bott.</sub> =	81.73	in <sup>3</sup>	I <sub>x</sub> =	516.79	in <sup>4</sup>	S <sub>bott.</sub> =	81.73	in <sup>3</sup>
C <sub>top</sub> =	6.4267	in	A =	20.8591	in <sup>2</sup>	C <sub>top</sub> =	6.4267	in	A =	20.8591	in <sup>2</sup>
C <sub>bottom</sub> =	6.3233	in	r <sub>x</sub> =	4.9775	in	C <sub>bottom</sub> =	6.3233	in	r <sub>x</sub> =	4.9775	in
J =	2.0295	in <sup>4</sup>	Z =	93.83	in <sup>3</sup>	Z =	93.83	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		4.5761	4.1975	19.2081	0.0595	0.9025	3.7272	3.7867
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>20.86</b>		<b>87.56</b>	<b>62.57</b>		<b>39.16</b>	<b>101.72</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	5.1000	in	S <sub>right</sub> =	19.95	in <sup>3</sup>	x-bar =	5.1000	in	S <sub>right</sub> =	19.95	in <sup>3</sup>
I <sub>y</sub> =	101.72	n <sup>4</sup>	S <sub>left</sub> =	19.95	in <sup>3</sup>	I <sub>y</sub> =	101.72	n <sup>4</sup>	S <sub>left</sub> =	19.95	in <sup>3</sup>
C <sub>right</sub> =	5.1000	in	A =	20.8591	in <sup>2</sup>	C <sub>right</sub> =	5.1000	in	A =	20.8591	in <sup>2</sup>
C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.2083	in	C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.2083	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	281.49 k-ft	281.49 k-ft
V	210.39 k	210.39 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section





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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Partial W-Section	W16x67	Bottom Angles:	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	12.6250 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



Additional Plate:	Miscellaneous:		
$A_3 = d =$	0.0000 in	$H =$	13.1250 in
$B_3 = t =$	0.3950 in	Gap =	0.5000 in

Coped Stringer S7-4 @ FB H11

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	12.7925	86.7715	0.2500	6.3062	269.7460	269.9960
	Web	4.7242	6.4800	30.6128	56.3131	0.0063	0.0002	56.3133
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	6.2363	136.1207	136.1937
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.4863	72.9264	90.9264
3	Additional Plate	0.0000	0.5000	0.0000	0.0000	5.9863	0.0000	0.0000
<b>Total</b>		<b>21.01</b>		<b>136.26</b>	<b>74.64</b>		<b>478.79</b>	<b>553.43</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	6.4863 in	S <sub>top</sub> =	83.36 in <sup>3</sup>	y-bar =	6.4863 in	S <sub>top</sub> =	83.36 in <sup>3</sup>
I <sub>x</sub> =	553.43 in <sup>4</sup>	S <sub>bottom</sub> =	85.32 in <sup>3</sup>	I <sub>x</sub> =	553.43 in <sup>4</sup>	S <sub>bottom</sub> =	85.32 in <sup>3</sup>
C <sub>top</sub> =	6.6387 in	A =	21.0072 in <sup>2</sup>	C <sub>top</sub> =	6.6387 in	A =	21.0072 in <sup>2</sup>
C <sub>bottom</sub> =	6.4863 in	r <sub>x</sub> =	5.1327 in	C <sub>bottom</sub> =	6.4863 in	r <sub>x</sub> =	5.1327 in
J =	2.0372 in <sup>4</sup>	Z =	97.44 in <sup>3</sup>	Z =	97.44 in <sup>3</sup>		

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		4.7242	4.1975	19.8298	0.0614	0.9025	3.8479	3.9093
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>21.01</b>		<b>88.18</b>	<b>62.57</b>		<b>39.28</b>	<b>101.85</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	5.1000 in	S <sub>right</sub> =	19.97 in <sup>3</sup>	x-bar =	5.1000 in	S <sub>right</sub> =	19.97 in <sup>3</sup>
I <sub>y</sub> =	101.85 in <sup>4</sup>	S <sub>left</sub> =	19.97 in <sup>3</sup>	I <sub>y</sub> =	101.85 in <sup>4</sup>	S <sub>left</sub> =	19.97 in <sup>3</sup>
C <sub>right</sub> =	5.1000 in	A =	21.0072 in <sup>2</sup>	C <sub>right</sub> =	5.1000 in	A =	21.0072 in <sup>2</sup>
C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.2018 in	C <sub>left</sub> =	5.1000 in	r <sub>y</sub> =	2.2018 in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	292.32 k-ft	292.32 k-ft
V	213.48 k	213.48 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Partial W-Section</b>	W16x67	<b>Bottom Angles:</b>	
$A_1 = b_f =$	10.2000 in	$A_2 = L_v =$	6.0000 in
$B_1 = t_f =$	0.6650 in	$B_2 = L_h =$	4.0000 in
$C_1 = d =$	11.7500 in	$C_2 = t =$	0.5000 in
$D_1 = t_w =$	0.3950 in		



<b>Additional Plate:</b>		<b>Miscellaneous:</b>	
$A_3 = d =$	0.0000 in	$H =$	12.1250 in
$B_3 = t =$	0.3950 in	$GAP =$	0.3750 in

Coped Stringer S7-4 @ FB H12

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange	6.7830	11.7925	79.9885	0.2500	5.7536	224.5417	224.7917
	Web	4.3786	5.9175	25.9102	44.8356	0.1214	0.0646	44.9002
2	Horizontal Legs	3.5000	0.2500	0.8750	0.0729	5.7889	117.2909	117.3638
	Vertical Legs	6.0000	3.0000	18.0000	18.0000	3.0389	55.4105	73.4105
3	Additional Plate	0.0000	0.3750	0.0000	0.0000	5.6639	0.0000	0.0000
<b>Total</b>		<b>20.66</b>		<b>124.77</b>	<b>63.16</b>		<b>397.31</b>	<b>460.47</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	6.0389	in	S <sub>top</sub> =	75.66	in <sup>3</sup>	y-bar =	6.0389	in	S <sub>top</sub> =	75.66	in <sup>3</sup>
I <sub>x</sub> =	460.47	in <sup>4</sup>	S <sub>bottom</sub> =	76.25	in <sup>3</sup>	I <sub>x</sub> =	460.47	in <sup>4</sup>	S <sub>bottom</sub> =	76.25	in <sup>3</sup>
C <sub>top</sub> =	6.0861	in	A =	20.6616	in <sup>2</sup>	C <sub>top</sub> =	6.0861	in	A =	20.6616	in <sup>2</sup>
C <sub>bottom</sub> =	6.0389	in	r <sub>x</sub> =	4.7208	in	C <sub>bottom</sub> =	6.0389	in	r <sub>x</sub> =	4.7208	in
J =	2.0193	in <sup>4</sup>	Z =	88.17	in <sup>3</sup>	Z =	88.17	in <sup>3</sup>			

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Top Flange		6.7830	4.1975	28.4716	58.8086	0.9025	5.5248	64.3334
	Web		4.3786	4.1975	18.3791	0.0569	0.9025	3.5664	3.6233
2 (Left)	Horizontal Leg		1.7500	1.7500	3.0625	1.7865	3.3500	19.6394	21.4258
	Vertical Leg		3.0000	3.7500	11.2500	0.0625	1.3500	5.4675	5.5300
2 (Right)	Horizontal Leg		1.7500	6.6450	11.6288	1.7865	1.5450	4.1773	5.9638
	Vertical Leg		3.0000	4.6450	13.9350	0.0625	0.4550	0.6211	0.6836
3	Additional Plate		0.0000	4.1975	0.0000	0.0000	0.9025	0.0000	0.0000
<b>Total</b>			<b>20.66</b>		<b>86.73</b>	<b>62.56</b>		<b>39.00</b>	<b>101.56</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.1000	in	S <sub>right</sub> =	19.91	in <sup>3</sup>	x-bar =	5.1000	in	S <sub>right</sub> =	19.91	in <sup>3</sup>
I <sub>y</sub> =	101.56	in <sup>4</sup>	S <sub>left</sub> =	19.91	in <sup>3</sup>	I <sub>y</sub> =	101.56	in <sup>4</sup>	S <sub>left</sub> =	19.91	in <sup>3</sup>
C <sub>right</sub> =	5.1000	in	A =	20.6616	in <sup>2</sup>	C <sub>right</sub> =	5.1000	in	A =	20.6616	in <sup>2</sup>
C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.2171	in	C <sub>left</sub> =	5.1000	in	r <sub>y</sub> =	2.2171	in

**Stringer Capacity**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

Non-composite Capacities*		
	AB	AI
M	264.51 k-ft	264.51 k-ft
V	206.26 k	206.26 k

F <sub>y</sub> =	36.00 ksi
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\*Compact Section



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

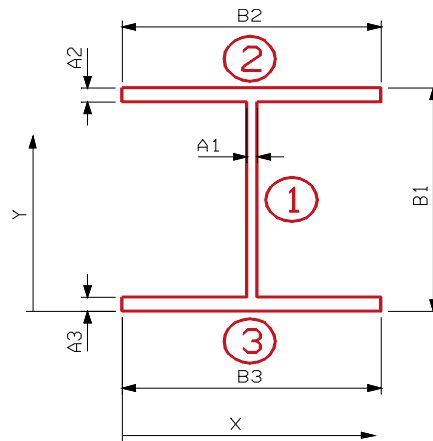
Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

- $A_1 = t_w = 0.3750$  in
- $B_1 = d = 33.0000$  in
- $A_2 = t_f = 0.7500$  in
- $B_2 = b_f = 8.0000$  in
- $A_3 = t_f = 0.7500$  in
- $B_3 = b_f = 8.0000$  in

$d_o = N/A$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Fascia Stringer F2-4**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		11.8125	16.5000	194.9063	976.7461	0.0000	0.0000	976.7461
2	Top Flange		6.0000	32.6250	195.7500	0.2813	16.1250	1560.0938	1560.3750
3	Bottom Flange		6.0000	0.3750	2.2500	0.2813	16.1250	1560.0938	1560.3750
<b>Total</b>			<b>23.81</b>		<b>392.91</b>	<b>977.31</b>		<b>3120.19</b>	<b>4097.50</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	16.5000	in	$S_{top} = 248.33$	$in^3$	y-bar =	16.5000	in	$S_{top} = 248.33$	$in^3$		
$I_x =$	4097.50	$in^4$	$S_{bott.} = 248.33$	$in^3$	$I_x =$	4097.50	$in^4$	$S_{bott.} = 248.33$	$in^3$		
$C_{top} =$	16.5000	in	A =	23.8125	$in^2$	$C_{top} =$	16.5000	in	A =	23.8125	$in^2$
$C_{bottom} =$	16.5000	in	$r_x =$	13.1177	in	$C_{bottom} =$	16.5000	in	$r_x =$	13.1177	in
J =	2.8037	$in^4$	Z =	286.52	$in^3$	Z =	286.52	$in^3$			



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Date 3/19/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		11.8125	4.0000	47.2500	0.1384	0.0000	0.0000	0.1384
2	Top Flange		6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
3	Bottom Flange		6.0000	4.0000	24.0000	32.0000	0.0000	0.0000	32.0000
<b>Total</b>			<b>23.81</b>		<b>95.25</b>	<b>64.14</b>		<b>0.00</b>	<b>64.14</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	4.0000	in	S <sub>right</sub> = 16.03 in <sup>3</sup>	x-bar =	4.0000	in	S <sub>right</sub> = 16.03 in <sup>3</sup>
I <sub>y</sub> =	64.14	in <sup>4</sup>	S <sub>left</sub> = 16.03 in <sup>3</sup>	I <sub>y</sub> =	64.14	in <sup>4</sup>	S <sub>left</sub> = 16.03 in <sup>3</sup>
C <sub>right</sub> =	4.0000	in	A = 23.8125 in <sup>2</sup>	C <sub>right</sub> =	4.0000	in	A = 23.8125 in <sup>2</sup>
C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.6412 in	C <sub>left</sub> =	4.0000	in	r <sub>y</sub> = 1.6412 in

Non-composite Capacities*		
	AB	AI
M	859.57 k-ft	859.57 k-ft
V	207.62 k	207.62 k

\*Compact Section

F<sub>y</sub> = **36.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



# FLOORBEAM RATING





Made By: CTG  
Checked By: DMP

Date: 4/11/2012  
Date: 4/13/2012

Job No.: p402110046

Floor Beams - As Built

Floor Beams	Type	CAPACITIES		SERVICE LOAD				IMPACT	RATING FACTOR - HS20				
				DEAD LOAD		HS 20			M		V		
		Moment (kip-ft)	Shear (kips)	M <sub>DL</sub> (k-ft)	V <sub>DL</sub> (k)	M <sub>LL</sub> (k-ft)	V <sub>LL</sub> (k)		Inv.	Opr.	Inv.	Opr.	
SECTION A	A1	36WF182	1951.40	471.25	219.73	30.47	361.44	58.4	1.30	1.63	2.73	2.62	4.38
	A2	36WF194	2089.24	500.50	330.09	68.84	661.03	77.23	1.30	0.89	1.49	1.89	3.15
	A3	36WF194	2089.24	500.50	332.52	51.5	394.54	68.2	1.30	1.49	2.49	2.25	3.76
	A4	36WF194	2089.24	500.50	526.73	81.05	472.41	84.4	1.30	1.05	1.76	1.66	2.77
	A5	36WF194	2089.24	500.50	303.47	54.62	599.07	67.27	1.30	1.00	1.67	2.26	3.78
	A6	36WF194	2699.41	500.50	407.02	67.74	458.99	74.81	1.30	1.68	2.80	1.95	3.26
SECTION B	B1	36WF194	2089.24	500.50	348.73	57.94	448.16	70.08	1.30	1.29	2.16	2.15	3.59
	B2	36WF194	2089.24	500.50	365.52	71.03	698.88	79.4	1.30	0.82	1.37	1.82	3.04
	B3	36WF194	2089.24	500.50	359.86	58.33	447.00	68.65	1.30	1.29	2.15	2.19	3.66
SECTION C	C1	36WF182	2333.33	471.25	449.4	70.84	431.94	78.3	1.30	1.44	2.40	1.72	2.87
	C2	36WF182	1951.40	471.25	299.29	51.28	577.88	65.14	1.30	0.96	1.60	2.20	3.68
	C3	36WF182	1951.40	471.25	270.26	48.12	570.16	64.66	1.30	0.99	1.66	2.24	3.74
	C4	36WF182	1951.40	471.25	373.11	69.27	419.96	73.97	1.30	1.24	2.07	1.83	3.05
	C5	36WF182	1951.40	471.25	291.77	46.14	559.38	60.83	1.30	1.00	1.66	2.40	4.00
	C6	36WF182	1951.40	471.25	407.04	68.39	534.37	74.73	1.30	0.94	1.58	1.81	3.03
	C7	36WF182	1951.40	471.25	415.16	66.23	536.03	75.75	1.30	0.93	1.56	1.80	3.01
	C8	36WF182	1951.40	471.25	319.96	49.27	552.98	64.08	1.30	0.98	1.64	2.25	3.76
	C9	36WF182	2333.33	471.25	420.52	58.93	446.81	70.86	1.30	1.42	2.37	1.97	3.30
SECTION D	D1	36WF182	1951.40	471.25	410.77	55.9	426.14	65.12	1.30	1.18	1.97	2.17	3.62
	D2	36WF194	2089.24	500.50	429.56	68.49	606.90	73.29	1.30	0.89	1.49	1.99	3.32
	D3	36WF182	1951.40	471.25	297.34	49.16	405.00	62.82	1.30	1.37	2.29	2.30	3.84
SECTION E	E1	36WF194	2477.64	500.50	405.06	63.68	431.47	74.07	1.30	1.60	2.68	2.00	3.34
	E2	36WF230	2561.62	488.46	412.5	65.42	639.17	72.34	1.30	1.12	1.88	1.98	3.30
	E3	36WF230	2561.62	488.46	424.33	78.53	533.77	81.97	1.30	1.33	2.23	1.67	2.79
	E4	36WF230	2561.62	488.46	439.35	80.46	532.70	82.13	1.30	1.32	2.21	1.66	2.77
	E5	36WF230	2561.62	488.46	383.26	63.52	622.85	69.96	1.30	1.17	1.96	2.06	3.43
	E6	36WF194	3010.69	500.50	516.71	88.16	491.34	83.95	1.30	1.69	2.82	1.63	2.72
SECTION F	F1	36WF230	2561.62	488.46	438.16	72.39	495.16	74.3	1.30	1.43	2.38	1.88	3.14
	F2	36WF230	2561.62	488.46	428.12	85.86	725.21	81.83	1.30	0.98	1.64	1.63	2.73
	F3	36WF230	2561.62	488.46	430.57	72.06	487.75	73.59	1.30	1.45	2.43	1.90	3.18
SECTION G	G1	36WF194	3010.69	500.50	534.93	76.07	495.21	76.82	1.30	1.66	2.77	1.85	3.09
	G2	36WF194	2089.24	500.50	436.53	65.63	606.68	71.81	1.30	0.89	1.48	2.05	3.42
	G3	36WF194	2089.24	500.50	517.21	80.4	583.65	74.03	1.30	0.86	1.44	1.90	3.17
	G4	36WF182	1951.40	471.25	378.16	47.28	445.65	66.29	1.30	1.16	1.94	2.19	3.66
	G5	36WF182	1951.40	471.25	448.35	68.69	596.85	75.04	1.30	0.81	1.36	1.80	3.01
	G6	36WF182	2221.03	471.25	251.97	43.24	385.54	60.2	1.30	1.74	2.91	2.44	4.08
SECTION H	H1	36WF182	2221.03	471.25	251.97	43.24	385.54	60.2	1.30	1.74	2.91	2.44	4.08
	H2	36WF170	1814.70	442.00	281	49.61	521.13	66.87	1.30	0.99	1.65	2.00	3.34
	H3	36WF170	1814.70	442.00	405.22	57.22	444.37	64.24	1.30	1.03	1.72	2.03	3.39
	H4	36WF170	1814.70	442.00	252.95	35.29	371.11	60.6	1.30	1.42	2.37	2.32	3.87
	H5	36WF170	1814.70	442.00	380.22	56.76	507.51	67.33	1.30	0.92	1.54	1.94	3.24
	H6	36WF170	1814.70	442.00	191.15	42.34	516.66	64.52	1.30	1.07	1.79	2.13	3.55
	H7	36WF170	1814.70	442.00	335.57	45.69	468.48	57.44	1.30	1.04	1.74	2.36	3.94
	H8	36WF170	1814.70	442.00	290.32	52.19	519.24	66.55	1.30	0.98	1.64	1.99	3.33
	H9	36WF170	1814.70	442.00	225.05	35.64	398.06	51.24	1.30	1.36	2.26	2.74	4.57
	H10	36WF170	1814.70	442.00	418.18	56.89	443.15	76.42	1.30	1.02	1.70	1.71	2.85
	H11	36WF170	1814.70	442.00	359.09	53.31	513.03	67.14	1.30	0.93	1.56	1.97	3.29
	H12	36WF182	2221.03	471.25	111.62	22.64	540.30	87.31	1.30	1.36	2.27	1.79	3.00





Made By: CTG  
Checked By: DMP

Date: 4/11/2012  
Date: 4/13/2012

Job No.: P402110046

Floor Beams - As Built

Floor Beams	Type	CAPACITIES		SERVICE LOAD				IMPACT	RATING FACTOR - 2F1		
				DEAD LOAD		2F1			M	V	
		Moment (kip-ft)	Shear (kips)	M <sub>DL</sub> (k-ft)	V <sub>DL</sub> (k)	M <sub>LL</sub> (k-ft)	V <sub>LL</sub> (k)		Opr.	Opr.	
SECTION A	A1	36WF182	1951.40	471.25	219.73	30.47	169.21	30.35	1.30	5.83	8.42
	A2	36WF194	2089.24	500.50	330.09	68.84	304.14	35.7	1.30	3.23	6.81
	A3	36WF194	2089.24	500.50	332.52	51.5	202.85	38.44	1.30	4.83	6.67
	A4	36WF194	2089.24	500.50	526.73	81.05	217.32	38.92	1.30	3.82	6.01
	A5	36WF194	2089.24	500.50	303.47	54.62	308.90	37.62	1.30	3.25	6.76
	A6	36WF194	2699.41	500.50	407.02	67.74	230.37	37.36	1.30	5.57	6.53
SECTION B	B1	36WF194	2089.24	500.50	348.73	57.94	230.36	36.03	1.30	4.20	6.98
	B2	36WF194	2089.24	500.50	365.52	71.03	324.07	36.86	1.30	2.95	6.55
	B3	36WF194	2089.24	500.50	359.86	58.33	229.48	35.41	1.30	4.18	7.10
SECTION C	C1	36WF182	2333.33	471.25	449.4	70.84	223.72	40.6	1.30	4.63	5.53
	C2	36WF182	1951.40	471.25	299.29	51.28	308.41	34.83	1.30	3.00	6.87
	C3	36WF182	1951.40	471.25	270.26	48.12	279.81	31.98	1.30	3.38	7.56
	C4	36WF182	1951.40	471.25	373.11	69.27	211.72	35.73	1.30	4.10	6.31
	C5	36WF182	1951.40	471.25	291.77	46.14	295.72	32.35	1.30	3.15	7.52
	C6	36WF182	1951.40	471.25	407.04	68.39	258.48	36.02	1.30	3.26	6.28
	C7	36WF182	1951.40	471.25	415.16	66.23	261.44	36.87	1.30	3.20	6.18
	C8	36WF182	1951.40	471.25	319.96	49.27	294.01	34.02	1.30	3.09	7.08
	C9	36WF182	2333.33	471.25	420.52	58.93	242.41	38.47	1.30	4.36	6.07
SECTION D	D1	36WF182	1951.40	471.25	410.77	55.9	224.58	34.33	1.30	3.73	6.87
	D2	36WF194	2089.24	500.50	429.56	68.49	288.28	35.12	1.30	3.14	6.93
	D3	36WF182	1951.40	471.25	297.34	49.16	216.31	33.56	1.30	4.28	7.18
SECTION E	E1	36WF194	2477.64	500.50	405.06	63.68	210.32	35.89	1.30	5.49	6.89
	E2	36WF230	2561.62	488.46	412.5	65.42	313.78	35.64	1.30	3.82	6.70
	E3	36WF230	2561.62	488.46	424.33	78.53	245.35	37.77	1.30	4.85	6.05
	E4	36WF230	2561.62	488.46	439.35	80.46	243.41	37.58	1.30	4.84	6.04
	E5	36WF230	2561.62	488.46	383.26	63.52	308.90	34.88	1.30	3.95	6.89
	E6	36WF194	3010.69	500.50	516.71	88.16	237.04	40.56	1.30	5.84	5.63
SECTION F	F1	36WF230	2561.62	488.46	438.16	72.39	239.82	35.97	1.30	4.92	6.49
	F2	36WF230	2561.62	488.46	428.12	85.86	327.41	36.9	1.30	3.62	6.04
	F3	36WF230	2561.62	488.46	430.57	72.06	237.39	35.97	1.30	4.99	6.49
SECTION G	G1	36WF194	3010.69	500.50	534.93	76.07	242.32	37.37	1.30	5.65	6.36
	G2	36WF194	2089.24	500.50	436.53	65.63	302.01	35.98	1.30	2.98	6.83
	G3	36WF194	2089.24	500.50	517.21	80.4	270.99	34.82	1.30	3.09	6.73
	G4	36WF182	1951.40	471.25	378.16	47.28	235.84	35.42	1.30	3.66	6.85
	G5	36WF182	1951.40	471.25	448.35	68.69	284.73	36.18	1.30	2.84	6.25
	G6	36WF182	2221.03	471.25	251.97	43.24	205.08	32.78	1.30	5.46	7.49
SECTION H	H1	36WF182	2221.03	471.25	251.97	43.24	205.08	32.78	1.30	5.46	7.49
	H2	36WF170	1814.70	442.00	281	49.61	254.52	33.61	1.30	3.37	6.65
	H3	36WF170	1814.70	442.00	405.22	57.22	221.85	32.93	1.30	3.44	6.61
	H4	36WF170	1814.70	442.00	252.95	35.29	206.37	33.3	1.30	4.26	7.04
	H5	36WF170	1814.70	442.00	380.22	56.76	248.75	34.71	1.30	3.14	6.28
	H6	36WF170	1814.70	442.00	191.15	42.34	254.87	33.53	1.30	3.64	6.83
	H7	36WF170	1814.70	442.00	335.57	45.69	254.13	32.27	1.30	3.21	7.02
	H8	36WF170	1814.70	442.00	290.32	52.19	257.97	33.94	1.30	3.30	6.52
	H9	36WF170	1814.70	442.00	225.05	35.64	221.17	28.79	1.30	4.07	8.13
	H10	36WF170	1814.70	442.00	418.18	56.89	218.01	38.51	1.30	3.45	5.66
	H11	36WF170	1814.70	442.00	359.09	53.31	257.46	34.25	1.30	3.10	6.44
	H12	36WF182	2221.03	471.25	111.62	22.64	296.94	45.88	1.30	4.14	5.70



Made By: CTG  
Checked By: DMP

Date: 4/11/2012  
Date: 4/13/2012

Job No.: P402110046

Floor Beams - As Built

Floor Beams	Type	CAPACITIES		SERVICE LOAD				IMPACT	RATING FACTOR - 3F1		
				DEAD LOAD		3F1			M	V	
		Moment (kip-ft)	Shear (kips)	M <sub>DL</sub> (k-ft)	V <sub>DL</sub> (k)	M <sub>LL</sub> (k-ft)	V <sub>LL</sub> (k)		Opr.	Opr.	
SECTION A	A1	36WF182	1951.40	471.25	219.73	30.47	242.82	39.58	1.30	4.06	6.45
	A2	36WF194	2089.24	500.50	330.09	68.84	461.59	54.15	1.30	2.13	4.49
	A3	36WF194	2089.24	500.50	332.52	51.5	300.47	52.77	1.30	3.26	4.86
	A4	36WF194	2089.24	500.50	526.73	81.05	329.33	58.95	1.30	2.52	3.97
	A5	36WF194	2089.24	500.50	303.47	54.62	455.42	51.58	1.30	2.20	4.93
	A6	36WF194	2699.41	500.50	407.02	67.74	346.09	56.07	1.30	3.71	4.35
SECTION B	B1	36WF194	2089.24	500.50	348.73	57.94	341.50	53.51	1.30	2.83	4.70
	B2	36WF194	2089.24	500.50	365.52	71.03	490.11	55.77	1.30	1.95	4.33
	B3	36WF194	2089.24	500.50	359.86	58.33	344.91	53.23	1.30	2.78	4.72
SECTION C	C1	36WF182	2333.33	471.25	449.4	70.84	330.69	60.1	1.30	3.13	3.73
	C2	36WF182	1951.40	471.25	299.29	51.28	456.13	51.6	1.30	2.03	4.64
	C3	36WF182	1951.40	471.25	270.26	48.12	420.63	47.94	1.30	2.25	5.04
	C4	36WF182	1951.40	471.25	373.11	69.27	316.93	53.77	1.30	2.74	4.19
	C5	36WF182	1951.40	471.25	291.77	46.14	438.14	47.69	1.30	2.12	5.10
	C6	36WF182	1951.40	471.25	407.04	68.39	388.96	54.14	1.30	2.16	4.18
	C7	36WF182	1951.40	471.25	415.16	66.23	392.03	55.35	1.30	2.13	4.12
	C8	36WF182	1951.40	471.25	319.96	49.27	436.07	50.76	1.30	2.08	4.75
	C9	36WF182	2333.33	471.25	420.52	58.93	357.43	56.6	1.30	2.96	4.13
SECTION D	D1	36WF182	1951.40	471.25	410.77	55.9	333.95	51.2	1.30	2.51	4.61
	D2	36WF194	2089.24	500.50	429.56	68.49	435.62	52.9	1.30	2.08	4.60
	D3	36WF182	1951.40	471.25	297.34	49.16	320.91	50.35	1.30	2.89	4.79
SECTION E	E1	36WF194	2477.64	500.50	405.06	63.68	318.20	53.96	1.30	3.63	4.58
	E2	36WF230	2561.62	488.46	412.5	65.42	471.86	53.37	1.30	2.54	4.47
	E3	36WF230	2561.62	488.46	424.33	78.53	370.88	56.99	1.30	3.21	4.01
	E4	36WF230	2561.62	488.46	439.35	80.46	369.04	56.99	1.30	3.19	3.99
	E5	36WF230	2561.62	488.46	383.26	63.52	466.78	52.34	1.30	2.62	4.59
	E6	36WF194	3010.69	500.50	516.71	88.16	359.15	61.45	1.30	3.85	3.72
SECTION F	F1	36WF230	2561.62	488.46	438.16	72.39	360.67	54.25	1.30	3.27	4.30
	F2	36WF230	2561.62	488.46	428.12	85.86	497.13	56.08	1.30	2.39	3.98
	F3	36WF230	2561.62	488.46	430.57	72.06	355.85	53.77	1.30	3.33	4.34
SECTION G	G1	36WF194	3010.69	500.50	534.93	76.07	361.46	55.69	1.30	3.79	4.27
	G2	36WF194	2089.24	500.50	436.53	65.63	451.77	53.87	1.30	1.99	4.56
	G3	36WF194	2089.24	500.50	517.21	80.4	412.04	52.79	1.30	2.03	4.44
	G4	36WF182	1951.40	471.25	378.16	47.28	347.79	51.81	1.30	2.48	4.68
	G5	36WF182	1951.40	471.25	448.35	68.69	428.35	54.31	1.30	1.89	4.16
	G6	36WF182	2221.03	471.25	251.97	43.24	305.83	48.68	1.30	3.66	5.04
SECTION H	H1	36WF182	2221.03	471.25	251.97	43.24	305.83	48.68	1.30	3.66	5.04
	H2	36WF170	1814.70	442.00	281	49.61	380.54	50.57	1.30	2.25	4.42
	H3	36WF170	1814.70	442.00	405.22	57.22	334.73	49.35	1.30	2.28	4.41
	H4	36WF170	1814.70	442.00	252.95	35.29	311.16	50.55	1.30	2.83	4.64
	H5	36WF170	1814.70	442.00	380.22	56.76	372.94	51.19	1.30	2.09	4.26
	H6	36WF170	1814.70	442.00	191.15	42.34	383.30	49.83	1.30	2.42	4.60
	H7	36WF170	1814.70	442.00	335.57	45.69	380.20	48.1	1.30	2.15	4.71
	H8	36WF170	1814.70	442.00	290.32	52.19	388.44	51.04	1.30	2.19	4.34
	H9	36WF170	1814.70	442.00	225.05	35.64	326.76	42.75	1.30	2.76	5.48
	H10	36WF170	1814.70	442.00	418.18	56.89	326.95	57.06	1.30	2.30	3.82
	H11	36WF170	1814.70	442.00	359.09	53.31	384.50	50.72	1.30	2.07	4.35
	H12	36WF182	2221.03	471.25	111.62	22.64	447.95	63.51	1.30	2.74	4.12



Made By: CTG  
Checked By: DMP

Date: 4/11/2012  
Date: 4/13/2012

Job No.: P402110046

Floor Beams - As Built

Floor Beams	Type	CAPACITIES		SERVICE LOAD				IMPACT	RATING FACTOR - 4F1		
				DEAD LOAD		4F1			M	V	
		Moment (kip-ft)	Shear (kips)	M <sub>DL</sub> (k-ft)	V <sub>DL</sub> (k)	M <sub>LL</sub> (k-ft)	V <sub>LL</sub> (k)		Opr.	Opr.	
SECTION A	A1	36WF182	1951.40	471.25	219.73	30.47	286.20	46.61	1.30	3.44	5.48
	A2	36WF194	2089.24	500.50	330.09	68.84	531.91	62.35	1.30	1.85	3.90
	A3	36WF194	2089.24	500.50	332.52	51.5	337.08	58.49	1.30	2.91	4.39
	A4	36WF194	2089.24	500.50	526.73	81.05	379.86	67.98	1.30	2.19	3.44
	A5	36WF194	2089.24	500.50	303.47	54.62	514.37	58.23	1.30	1.95	4.36
	A6	36WF194	2699.41	500.50	407.02	67.74	391.70	63.62	1.30	3.28	3.84
SECTION B	B1	36WF194	2089.24	500.50	348.73	57.94	382.32	59.94	1.30	2.53	4.20
	B2	36WF194	2089.24	500.50	365.52	71.03	563.69	64.08	1.30	1.69	3.77
	B3	36WF194	2089.24	500.50	359.86	58.33	388.32	59.67	1.30	2.47	4.21
SECTION C	C1	36WF182	2333.33	471.25	449.4	70.84	369.94	67.22	1.30	2.80	3.34
	C2	36WF182	1951.40	471.25	299.29	51.28	505.84	57.62	1.30	1.83	4.15
	C3	36WF182	1951.40	471.25	270.26	48.12	476.83	54.47	1.30	1.99	4.44
	C4	36WF182	1951.40	471.25	373.11	69.27	359.30	61.77	1.30	2.41	3.65
	C5	36WF182	1951.40	471.25	291.77	46.14	489.48	53.28	1.30	1.90	4.57
	C6	36WF182	1951.40	471.25	407.04	68.39	443.29	61.85	1.30	1.90	3.66
	C7	36WF182	1951.40	471.25	415.16	66.23	450.54	63.54	1.30	1.85	3.59
	C8	36WF182	1951.40	471.25	319.96	49.27	488.80	57.16	1.30	1.86	4.22
	C9	36WF182	2333.33	471.25	420.52	58.93	398.29	62.62	1.30	2.65	3.73
SECTION D	D1	36WF182	1951.40	471.25	410.77	55.9	373.67	57.23	1.30	2.24	4.12
	D2	36WF194	2089.24	500.50	429.56	68.49	500.30	60.44	1.30	1.81	4.03
	D3	36WF182	1951.40	471.25	297.34	49.16	363.37	55.89	1.30	2.55	4.31
SECTION E	E1	36WF194	2477.64	500.50	405.06	63.68	359.73	61	1.30	3.21	4.05
	E2	36WF230	2561.62	488.46	412.5	65.42	535.12	60.4	1.30	2.24	3.95
	E3	36WF230	2561.62	488.46	424.33	78.53	427.86	65.86	1.30	2.78	3.47
	E4	36WF230	2561.62	488.46	439.35	80.46	426.36	65.82	1.30	2.76	3.45
	E5	36WF230	2561.62	488.46	383.26	63.52	531.15	59.51	1.30	2.30	4.04
	E6	36WF194	3010.69	500.50	516.71	88.16	410.01	70.22	1.30	3.38	3.25
SECTION F	F1	36WF230	2561.62	488.46	438.16	72.39	413.53	62.06	1.30	2.85	3.76
	F2	36WF230	2561.62	488.46	428.12	85.86	576.54	64.99	1.30	2.06	3.43
	F3	36WF230	2561.62	488.46	430.57	72.06	408.76	61.69	1.30	2.90	3.79
SECTION G	G1	36WF194	3010.69	500.50	534.93	76.07	414.94	64.04	1.30	3.30	3.71
	G2	36WF194	2089.24	500.50	436.53	65.63	514.72	61.12	1.30	1.75	4.02
	G3	36WF194	2089.24	500.50	517.21	80.4	472.18	60.36	1.30	1.78	3.88
	G4	36WF182	1951.40	471.25	378.16	47.28	394.03	58.95	1.30	2.19	4.11
	G5	36WF182	1951.40	471.25	448.35	68.69	491.61	62.27	1.30	1.65	3.63
	G6	36WF182	2221.03	471.25	251.97	43.24	343.70	54.43	1.30	3.26	4.51
SECTION H	H1	36WF182	2221.03	471.25	251.97	43.24	343.70	54.43	1.30	3.26	4.51
	H2	36WF170	1814.70	442.00	281	49.61	434.44	56.71	1.30	1.97	3.94
	H3	36WF170	1814.70	442.00	405.22	57.22	380.63	55.53	1.30	2.00	3.92
	H4	36WF170	1814.70	442.00	252.95	35.29	345.38	55.39	1.30	2.55	4.23
	H5	36WF170	1814.70	442.00	380.22	56.76	423.53	58.39	1.30	1.84	3.73
	H6	36WF170	1814.70	442.00	191.15	42.34	435.72	56.49	1.30	2.13	4.05
	H7	36WF170	1814.70	442.00	335.57	45.69	425.44	53.38	1.30	1.92	4.24
	H8	36WF170	1814.70	442.00	290.32	52.19	440.07	57.34	1.30	1.93	3.86
	H9	36WF170	1814.70	442.00	225.05	35.64	363.02	47.25	1.30	2.48	4.95
	H10	36WF170	1814.70	442.00	418.18	56.89	370.53	65.25	1.30	2.03	3.34
	H11	36WF170	1814.70	442.00	359.09	53.31	440.60	58.12	1.30	1.81	3.79
	H12	36WF182	2221.03	471.25	111.62	22.64	505.24	71.73	1.30	2.43	3.64



Made By: CTG  
Checked By: DMP

Date: 4/11/2012  
Date: 4/13/2012

Job No.: P402110046

Floor Beams - As Built

Floor Beams	Type	CAPACITIES		SERVICE LOAD				IMPACT	RATING FACTOR - 5C1		
				DEAD LOAD		5C1			M	V	
		Moment (kip-ft)	Shear (kips)	M <sub>DL</sub> (k-ft)	V <sub>DL</sub> (k)	M <sub>LL</sub> (k-ft)	V <sub>LL</sub> (k)		Opr.	Opr.	
SECTION A	A1	36WF182	1951.40	471.25	219.73	30.47	255.57	43.84	1.30	3.86	5.83
	A2	36WF194	2089.24	500.50	330.09	68.84	466.14	53.73	1.30	2.11	4.53
	A3	36WF194	2089.24	500.50	332.52	51.5	279.76	50.21	1.30	3.50	5.11
	A4	36WF194	2089.24	500.50	526.73	81.05	337.66	59.93	1.30	2.46	3.90
	A5	36WF194	2089.24	500.50	303.47	54.62	450.82	53.28	1.30	2.22	4.77
	A6	36WF194	2699.41	500.50	407.02	67.74	336.63	54.79	1.30	3.81	4.45
SECTION B	B1	36WF194	2089.24	500.50	348.73	57.94	319.69	49.83	1.30	3.03	5.05
	B2	36WF194	2089.24	500.50	365.52	71.03	487.79	55.2	1.30	1.96	4.38
	B3	36WF194	2089.24	500.50	359.86	58.33	335.90	51.28	1.30	2.86	4.90
SECTION C	C1	36WF182	2333.33	471.25	449.4	70.84	317.52	58.49	1.30	3.26	3.84
	C2	36WF182	1951.40	471.25	299.29	51.28	425.28	48.41	1.30	2.17	4.95
	C3	36WF182	1951.40	471.25	270.26	48.12	382.04	43.5	1.30	2.48	5.56
	C4	36WF182	1951.40	471.25	373.11	69.27	308.19	53.34	1.30	2.82	4.23
	C5	36WF182	1951.40	471.25	291.77	46.14	405.91	44.44	1.30	2.29	5.48
	C6	36WF182	1951.40	471.25	407.04	68.39	371.22	53.21	1.30	2.27	4.25
	C7	36WF182	1951.40	471.25	415.16	66.23	391.52	55.43	1.30	2.13	4.11
	C8	36WF182	1951.40	471.25	319.96	49.27	419.00	49.4	1.30	2.17	4.88
	C9	36WF182	2333.33	471.25	420.52	58.93	346.48	54.54	1.30	3.05	4.28
SECTION D	D1	36WF182	1951.40	471.25	410.77	55.9	320.03	47.93	1.30	2.62	4.92
	D2	36WF194	2089.24	500.50	429.56	68.49	432.62	52.1	1.30	2.09	4.67
	D3	36WF182	1951.40	471.25	297.34	49.16	314.08	48.35	1.30	2.95	4.99
SECTION E	E1	36WF194	2477.64	500.50	405.06	63.68	304.93	52.37	1.30	3.79	4.72
	E2	36WF230	2561.62	488.46	412.5	65.42	457.76	51.66	1.30	2.62	4.62
	E3	36WF230	2561.62	488.46	424.33	78.53	376.74	57.13	1.30	3.16	4.00
	E4	36WF230	2561.62	488.46	439.35	80.46	376.78	58.11	1.30	3.13	3.91
	E5	36WF230	2561.62	488.46	383.26	63.52	455.04	50.89	1.30	2.68	4.72
	E6	36WF194	3010.69	500.50	516.71	88.16	355.95	60.86	1.30	3.89	3.75
SECTION F	F1	36WF230	2561.62	488.46	438.16	72.39	367.82	55.15	1.30	3.20	4.23
	F2	36WF230	2561.62	488.46	428.12	85.86	556.75	62.34	1.30	2.13	3.58
	F3	36WF230	2561.62	488.46	430.57	72.06	353.87	53.38	1.30	3.35	4.38
SECTION G	G1	36WF194	3010.69	500.50	534.93	76.07	342.07	55.28	1.30	4.01	4.30
	G2	36WF194	2089.24	500.50	436.53	65.63	444.99	51.86	1.30	2.02	4.74
	G3	36WF194	2089.24	500.50	517.21	80.4	415.28	52.36	1.30	2.02	4.47
	G4	36WF182	1951.40	471.25	378.16	47.28	328.46	47.73	1.30	2.63	5.08
	G5	36WF182	1951.40	471.25	448.35	68.69	426.23	53.2	1.30	1.90	4.25
	G6	36WF182	2221.03	471.25	251.97	43.24	285.35	45.95	1.30	3.93	5.34
SECTION H	H1	36WF182	2221.03	471.25	251.97	43.24	285.35	45.95	1.30	3.93	5.34
	H2	36WF170	1814.70	442.00	281	49.61	356.35	45.27	1.30	2.41	4.93
	H3	36WF170	1814.70	442.00	405.22	57.22	324.26	48.21	1.30	2.35	4.51
	H4	36WF170	1814.70	442.00	252.95	35.29	286.76	46.02	1.30	3.07	5.09
	H5	36WF170	1814.70	442.00	380.22	56.76	359.85	48.85	1.30	2.17	4.46
	H6	36WF170	1814.70	442.00	191.15	42.34	386.61	47.2	1.30	2.40	4.85
	H7	36WF170	1814.70	442.00	335.57	45.69	351.08	44.7	1.30	2.32	5.06
	H8	36WF170	1814.70	442.00	290.32	52.19	382.55	49.15	1.30	2.22	4.50
	H9	36WF170	1814.70	442.00	225.05	35.64	284.91	39.4	1.30	3.16	5.94
	H10	36WF170	1814.70	442.00	418.18	56.89	314.07	49.2	1.30	2.39	4.43
	H11	36WF170	1814.70	442.00	359.09	53.31	376.02	73.19	1.30	2.12	3.01
	H12	36WF182	2221.03	471.25	111.62	22.64	439.01	46.23	1.30	2.80	5.66



Made By: CTG  
Checked By: DMP

Date: 4/12/2012  
Date: 4/13/2012

Job No.: P402110046  
Sheet No.: \_\_\_\_\_

**Lakefront Trestle- Girder Fatigue Summary**

Redundant? No → f = 1.0 (Calculate SAFE Life per ODOT BDM 402.2.6)  
 Past ADTT (T<sub>p</sub>) = 257 → R<sub>s</sub> = 1.75  
 Weight Ratios = 1.0 (W<sub>p</sub>/W, W<sub>N</sub>/W) T<sub>N</sub> = 580 (Future ADTT, assuming growth rate of %1/year)  
 Impact\* = 1.15 (Per ODOT BDM 402.2.6)  
 F<sub>s3</sub> = 1.00  
 Y<sub>p</sub> = 72 (Present age of the bridge in years) Y<sub>f,MIN</sub> = **-17 years**

\* Impact is applied in calculation of stress range, S<sub>r</sub>. Do not include in service moment range.

**Floorbeam Rating - As Built**

Floor Beams	Type	Section Modulus (in <sup>3</sup> )	SERVICE LOAD		FATIGUE						
			Fatigue Moment Range		Sr (ksi)	C (Cycles per truck)	Category	K (Detail Constant)	Y <sub>f</sub> (years)	Y <sub>N</sub> (years)	Y <sub>f</sub> (years)
			S <sub>x</sub>	M <sub>LL</sub> (k-ft)							
SECTION A	A1	36WF182	621.20	173.31	3.85	1.00	D	6	76.33	33.81	1.92
	A2	36WF194	663.60	157.56	3.28	1.00	D	6	123.84	54.86	22.96
	A3	36WF194	663.60	204.73	4.26	1.00	D	6	56.45	25.01	-6.89
	A4	36WF194	663.60	205.04	4.26	1.00	D	6	56.19	24.89	-7.00
	A5	36WF194	663.60	173.82	3.61	1.00	D	6	92.23	40.86	8.96
A6	36WF194	858.55	180.78	2.91	1.00	D	6	177.55	78.65	46.76	
SECTION B	B1	36WF194	663.60	183	3.81	1.00	D	6	79.04	35.01	3.12
	B2	36WF194	663.60	176.88	3.68	1.00	D	6	87.53	38.77	6.88
	B3	36WF194	663.60	177.97	3.70	1.00	D	6	85.93	38.07	6.17
SECTION C	C1	36WF182	662.43	214.33	4.47	1.00	D	6	48.94	21.68	-10.22
	C2	36WF182	621.20	165.15	3.67	1.00	D	6	88.21	39.08	7.18
	C3	36WF182	621.20	192.6	4.28	1.00	D	6	55.62	24.64	-7.26
	C4	36WF182	621.20	217.01	4.82	1.00	D	6	38.88	17.22	-14.67
	C5	36WF182	621.20	220.04	4.89	1.00	D	6	37.30	16.52	-15.37
	C6	36WF182	621.20	208.56	4.63	1.00	D	6	43.80	19.40	-12.49
	C7	36WF182	621.20	173.09	3.85	1.00	D	6	76.62	33.94	2.05
	C8	36WF182	621.20	191.87	4.26	1.00	D	6	56.25	24.92	-6.98
	C9	36WF182	662.43	242.19	5.05	1.00	D	6	33.92	15.03	-16.87
SECTION D	D1	36WF182	621.20	229.91	5.11	1.00	D	6	32.70	14.48	-17.41
	D2	36WF194	663.60	218.42	4.54	1.00	D	6	46.48	20.59	-11.30
	D3	36WF182	621.20	198.26	4.40	1.00	D	6	50.99	22.59	-9.31
SECTION E	E1	36WF194	706.00	224.61	4.39	1.00	D	6	51.47	22.80	-9.09
	E2	36WF230	835.50	183.31	3.03	1.00	D	6	156.95	69.53	37.63
	E3	36WF230	835.50	220.78	3.65	1.00	D	6	89.83	39.79	7.90
	E4	36WF230	835.50	226.56	3.74	1.00	D	6	83.13	36.83	4.93
	E5	36WF230	835.50	196.75	3.25	1.00	D	6	126.93	56.23	24.33
	E6	36WF194	959.69	207.43	2.98	1.00	D	6	164.15	72.72	40.82
SECTION F	F1	36WF230	835.50	215.09	3.55	1.00	D	6	97.15	43.04	11.14
	F2	36WF230	835.50	230.72	3.81	1.00	D	6	78.71	34.87	2.97
	F3	36WF230	835.50	202.09	3.34	1.00	D	6	117.13	51.89	19.99
SECTION G	G1	36WF194	959.69	193.22	2.78	1.00	D	6	203.10	89.97	58.08
	G2	36WF194	663.60	194.83	4.05	1.00	D	6	65.50	29.01	-2.88
	G3	36WF194	663.60	175.48	3.65	1.00	D	6	89.64	39.71	7.81
	G4	36WF182	621.20	169.97	3.78	1.00	D	6	80.92	35.85	3.95
	G5	36WF182	621.20	144.98	3.22	1.00	D	6	130.39	57.76	25.87
	G6	36WF182	648.66	196.01	4.17	1.00	D	6	60.07	26.61	-5.28
SECTION H	H1	36WF182	648.66	196.01	4.17	1.00	D	6	60.07	26.61	-5.28
	H2	36WF170	579.10	125.25	2.98	1.00	D	6	163.83	72.58	40.68
	H3	36WF170	579.10	141	3.36	1.00	D	6	114.83	50.87	18.98
	H4	36WF170	579.10	177.12	4.22	1.00	D	6	57.93	25.66	-6.23
	H5	36WF170	579.10	124.61	2.97	1.00	D	6	166.37	73.70	41.80
	H6	36WF170	579.10	116.89	2.79	1.00	D	6	201.56	89.29	57.39
	H7	36WF170	579.10	180.7	4.31	1.00	D	6	54.56	24.17	-7.73
	H8	36WF170	579.10	125.11	2.98	1.00	D	6	164.38	72.82	40.92
	H9	36WF170	579.10	148.65	3.54	1.00	D	6	98.00	43.41	11.52
	H10	36WF170	579.10	160.18	3.82	1.00	D	6	78.33	34.70	2.80
	H11	36WF170	579.10	123.18	2.94	1.00	D	6	172.23	76.30	44.40
	H12	36WF182	648.66	240.32	5.11	1.00	D	6	32.59	14.44	-17.46



Made By: CTG

Date: 4/11/2012

Job No.: p402110046

Checked By: DMP

Date: 4/13/2012

Floor Beams - As Inspected

Revised By: CTG

Date: 4/30/2012

Floor Beams	Type	CAPACITIES		SERVICE LOAD				IMPACT	RATING FACTOR - HS20		
				DEAD LOAD		HS 20			M		
		Moment (kip-ft)	Shear (kips)	M <sub>DL</sub> (k-ft)	V <sub>DL</sub> (k)	M <sub>LL</sub> (k-ft)	V <sub>LL</sub> (k)		Inv.	Opr.	
A	A2	36WF194	2055.63	---	330.09	---	661.03	---	1.30	0.87	1.46
	A3	36WF194	2055.63	---	332.52	---	394.54	---	1.30	1.46	2.44
	A4	36WF194	2055.63	---	526.73	---	472.41	---	1.30	1.03	1.72
	A5	36WF194	1985.31	---	303.47	---	599.07	---	1.30	0.94	1.57
	A6	36WF194	2518.92	---	407.02	---	458.99	---	1.30	1.54	2.57
B	B1	36WF194	2055.62	---	348.73	---	448.16	---	1.30	1.27	2.12
	B3	36WF194	2022.89	---	359.86	---	447.00	---	1.30	1.23	2.06
C	C1	36WF182	2266.98	---	449.4	---	431.94	---	1.30	1.38	2.31
	C2	36WF182	1885.05	---	299.29	---	577.88	---	1.30	0.92	1.53
	C3	36WF182	1885.05	---	270.26	---	570.16	---	1.30	0.95	1.59
	C4	36WF182	1885.05	---	373.11	---	419.96	---	1.30	1.18	1.97
	C5	36WF182	1885.05	---	291.77	---	559.38	---	1.30	0.95	1.59
	C6	36WF182	1885.05	---	407.04	---	534.37	---	1.30	0.90	1.50
I	H12	36WF182	1614.88	---	111.62	---	540.30	---	1.30	0.96	1.61



Made By: CTG

Date: 4/11/2012

Job No.: P402110046

Checked By: DMP

Date: 4/13/2012

Floor Beams - As Inspected

Revised By: CTG

Date: 4/30/2012

Floor Beams	Type	CAPACITIES		SERVICE LOAD				IMPACT	RATING	
				DEAD LOAD		2F1			FACTOR - 2F1	
		Moment (kip-ft)	Shear (kips)	M <sub>DL</sub> (k-ft)	V <sub>DL</sub> (k)	M <sub>LL</sub> (k-ft)	V <sub>LL</sub> (k)		M	Opr.
A	A2	36WF194	2055.63	---	330.09	---	304.14	---	1.30	3.16
	A3	36WF194	2055.63	---	332.52	---	202.85	---	1.30	4.74
	A4	36WF194	2055.63	---	526.73	---	217.32	---	1.30	3.73
	A5	36WF194	1985.31	---	303.47	---	308.90	---	1.30	3.05
	A6	36WF194	2518.92	---	407.02	---	230.37	---	1.30	5.11
B	B1	36WF194	2055.62	---	348.73	---	230.36	---	1.30	4.12
	B3	36WF194	2022.89	---	359.86	---	229.48	---	1.30	4.01
C	C1	36WF182	2266.98	---	449.4	---	223.72	---	1.30	4.45
	C2	36WF182	1885.05	---	299.29	---	308.41	---	1.30	2.87
	C3	36WF182	1885.05	---	270.26	---	279.81	---	1.30	3.24
	C4	36WF182	1885.05	---	373.11	---	211.72	---	1.30	3.91
	C5	36WF182	1885.05	---	291.77	---	295.72	---	1.30	3.01
	C6	36WF182	1885.05	---	407.04	---	258.48	---	1.30	3.10
I	H12	36WF182	1614.88	---	111.62	---	296.94	---	1.30	2.93



Made By: CTG

Date: 4/11/2012

Job No.: P402110046

Checked By: DMP

Date: 4/13/2012

Floor Beams - As Inspected

Revised By: CTG

Date: 4/30/2012

Floor Beams	Type	CAPACITIES		SERVICE LOAD				IMPACT	RATING	
				DEAD LOAD		3F1			FACTOR - 3F1	
		Moment (kip-ft)	Shear (kips)	M <sub>DL</sub> (k-ft)	V <sub>DL</sub> (k)	M <sub>LL</sub> (k-ft)	V <sub>LL</sub> (k)		M	Opr.
A	A2	36WF194	2055.63	---	330.09	---	461.59	---	1.30	2.09
	A3	36WF194	2055.63	---	332.52	---	300.47	---	1.30	3.20
	A4	36WF194	2055.63	---	526.73	---	329.33	---	1.30	2.46
	A5	36WF194	1985.31	---	303.47	---	455.42	---	1.30	2.07
	A6	36WF194	2518.92	---	407.02	---	346.09	---	1.30	3.40
B	B1	36WF194	2055.62	---	348.73	---	341.50	---	1.30	2.78
	B3	36WF194	2022.89	---	359.86	---	344.91	---	1.30	2.67
C	C1	36WF182	2266.98	---	449.4	---	330.69	---	1.30	3.01
	C2	36WF182	1885.05	---	299.29	---	456.13	---	1.30	1.94
	C3	36WF182	1885.05	---	270.26	---	420.63	---	1.30	2.16
	C4	36WF182	1885.05	---	373.11	---	316.93	---	1.30	2.61
	C5	36WF182	1885.05	---	291.77	---	438.14	---	1.30	2.03
	C6	36WF182	1885.05	---	407.04	---	388.96	---	1.30	2.06
I	H12	36WF182	1614.88	---	111.62	---	447.95	---	1.30	1.94





Made By: CTG

Date: 4/11/2012

Job No.: P402110046

Checked By: DMP

Date: 4/13/2012

Floor Beams - As Inspected

Revised By: CTG

Date: 4/30/2012

Floor Beams	Type	CAPACITIES		SERVICE LOAD				IMPACT	RATING	
				DEAD LOAD		4F1			FACTOR - 4F1	
		Moment (kip-ft)	Shear (kips)	M <sub>DL</sub> (k-ft)	V <sub>DL</sub> (k)	M <sub>LL</sub> (k-ft)	V <sub>LL</sub> (k)		M	Opr.
A	A2	36WF194	2055.63	---	330.09	---	531.91	---	1.30	1.81
	A3	36WF194	2055.63	---	332.52	---	337.08	---	1.30	2.85
	A4	36WF194	2055.63	---	526.73	---	379.86	---	1.30	2.14
	A5	36WF194	1985.31	---	303.47	---	514.37	---	1.30	1.83
	A6	36WF194	2518.92	---	407.02	---	391.70	---	1.30	3.01
B	B1	36WF194	2055.62	---	348.73	---	382.32	---	1.30	2.48
	B3	36WF194	2022.89	---	359.86	---	388.32	---	1.30	2.37
C	C1	36WF182	2266.98	---	449.4	---	369.94	---	1.30	2.69
	C2	36WF182	1885.05	---	299.29	---	505.84	---	1.30	1.75
	C3	36WF182	1885.05	---	270.26	---	476.83	---	1.30	1.90
	C4	36WF182	1885.05	---	373.11	---	359.30	---	1.30	2.31
	C5	36WF182	1885.05	---	291.77	---	489.48	---	1.30	1.82
	C6	36WF182	1885.05	---	407.04	---	443.29	---	1.30	1.81
I	H12	36WF182	1614.88	---	111.62	---	505.24	---	1.30	1.72



Made By: CTG

Date: 4/11/2012

Job No.: P402110046

Checked By: DMP

Date: 4/13/2012

Floor Beams - As Inspected

Revised By: CTG

Date: 4/30/2012

Floor Beams	Type	CAPACITIES		SERVICE LOAD				IMPACT	RATING	
				DEAD LOAD		5C1			FACTOR - 5C1	
		Moment (kip-ft)	Shear (kips)	M <sub>DL</sub> (k-ft)	V <sub>DL</sub> (k)	M <sub>LL</sub> (k-ft)	V <sub>LL</sub> (k)		M	Opr.
A	A2	36WF194	2055.63	---	330.09	---	466.14	---	1.30	2.06
	A3	36WF194	2055.63	---	332.52	---	279.76	---	1.30	3.43
	A4	36WF194	2055.63	---	526.73	---	337.66	---	1.30	2.40
	A5	36WF194	1985.31	---	303.47	---	450.82	---	1.30	2.09
	A6	36WF194	2518.92	---	407.02	---	336.63	---	1.30	3.50
B	B1	36WF194	2055.62	---	348.73	---	319.69	---	1.30	2.97
	B3	36WF194	2022.89	---	359.86	---	335.90	---	1.30	2.74
C	C1	36WF182	2266.98	---	449.4	---	317.52	---	1.30	3.14
	C2	36WF182	1885.05	---	299.29	---	425.28	---	1.30	2.08
	C3	36WF182	1885.05	---	270.26	---	382.04	---	1.30	2.38
	C4	36WF182	1885.05	---	373.11	---	308.19	---	1.30	2.69
	C5	36WF182	1885.05	---	291.77	---	405.91	---	1.30	2.19
	C6	36WF182	1885.05	---	407.04	---	371.22	---	1.30	2.16
I	H12	36WF182	1614.88	---	111.62	---	439.01	---	1.30	1.98



**Lakefront Trestle- Girder Fatigue Summary**

Made By: CTG  
 Checked By: DMP  
 Revised By: CTG

Date: 4/12/2012  
 Date: 4/13/2012  
 Date: 4/30/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

Redundant? No → f = 1.0 (Calculate SAFE Life per ODOT BDM 402.2.6)  
 Past ADTT (T<sub>P</sub>) = 257 → R<sub>s</sub> = 1.75  
 Weight Ratios = 1.0 (W<sub>P</sub>/W, W<sub>N</sub>/W) T<sub>N</sub> = 580 (Future ADTT, assuming growth rate of %1/year)  
 Impact\* = 1.15 (Per ODOT BDM 402.2.6)  
 F<sub>s3</sub> = 1.00  
 Y<sub>P</sub> = 72 (Present age of the bridge in years) Y<sub>i,MIN</sub> = **-29 years**

\* Impact is applied in calculation of stress range, S<sub>r</sub>. Do not include in service moment range.

**Floorbeam Rating - As Inspected**

Floor Beams	Type	Section Modulus (in <sup>3</sup> )	SERVICE LOAD		FATIGUE						
			Fatigue Moment Range		K (Detail Constant)	Y <sub>i</sub> (years)	Y <sub>N</sub> (years)	Y <sub>r</sub> (years)			
			S <sub>x</sub>	M <sub>LL</sub> (k-ft)					S <sub>r</sub> (ksi)	C (Cycles per truck)	Category
A	A2	36WF194	634.43	157.56	3.43	1.00	D	6	108.21	47.94	<b>16.04</b>
	A3	36WF194	634.43	204.73	4.45	1.00	D	6	49.33	21.85	<b>-10.04</b>
	A4	36WF194	634.43	205.04	4.46	1.00	D	6	49.10	21.75	<b>-10.14</b>
	A5	36WF194	595.12	173.82	4.03	1.00	D	6	66.52	29.47	<b>-2.43</b>
	A6	36WF194	758.24	180.78	3.29	1.00	D	6	122.30	54.18	<b>22.28</b>
B	B1	36WF194	634.43	183	3.98	1.00	D	6	69.07	30.60	<b>-1.30</b>
	B3	36WF194	629.62	177.97	3.90	1.00	D	6	73.39	32.51	<b>0.62</b>
C	C1	36WF182	635.48	214.33	4.65	1.00	D	6	43.20	19.14	<b>-12.76</b>
	C2	36WF182	587.48	165.15	3.88	1.00	D	6	74.61	33.05	<b>1.16</b>
	C3	36WF182	587.48	192.6	4.52	1.00	D	6	47.04	20.84	<b>-11.06</b>
	C4	36WF182	587.48	217.01	5.10	1.00	D	6	32.89	14.57	<b>-17.33</b>
	C5	36WF182	587.48	220.04	5.17	1.00	D	6	31.55	13.97	<b>-17.92</b>
	C6	36WF182	587.48	208.56	4.90	1.00	D	6	37.05	16.41	<b>-15.48</b>
±	H12	36WF182	399.67	240.32	8.30	1.00	D	6	7.62	3.38	<b>-28.52</b>



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Date 4/10/2012  
Date 4/12/2012

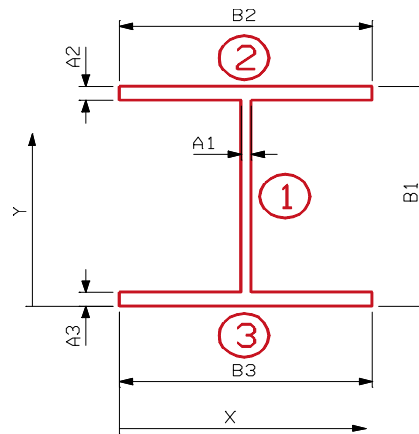
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions:**

- $A_1 = t_w = 0.7700$  in
- $B_1 = d = 36.4800$  in
- $A_2 = t_f = 1.2600$  in
- $B_2 = b_f = 12.1170$  in
- $A_3 = t_f = 1.2600$  in
- $B_3 = b_f = 12.1170$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Floorbeam A2**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	26.1492	18.2400	476.9614	2513.1159	0.0000	0.0000	2513.1159
2	Top Flange	15.2674	35.8500	547.3370	2.0199	17.6100	4734.6117	4736.6316
3	Bottom Flange	15.2674	0.6300	9.6185	2.0199	17.6100	4734.6117	4736.6316
<b>Total</b>		<b>56.68</b>		<b>1033.92</b>	<b>2517.16</b>		<b>9469.22</b>	<b>11986.38</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	12.1170	0.0625	-0.7573	0.0313	-0.0237	-0.0002	18.4553	-257.9397
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>-0.76</b>		<b>-0.02</b>	<b>0.00</b>		<b>-257.94</b>	<b>-257.94</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	18.2400 in	$S_{top} =$	657.15 in <sup>3</sup>	y-bar =	18.4866 in	$S_{top} =$	651.82 in <sup>3</sup>
$I_x =$	11986.38 in <sup>4</sup>	$S_{bottom} =$	657.15 in <sup>3</sup>	$I_x =$	11728.44 in <sup>4</sup>	$S_{bottom} =$	634.43 in <sup>3</sup>
$C_{top} =$	18.2400 in	A =	56.6840 in <sup>2</sup>	$C_{top} =$	17.9934 in	A =	55.9267 in <sup>2</sup>
$C_{bottom} =$	18.2400 in	$r_x =$	14.5416 in	$C_{bottom} =$	18.4866 in	$r_x =$	14.4814 in
J =	21.3270 in <sup>4</sup>	Z =	759.73 in <sup>3</sup>			Z =	747.50 in <sup>3</sup>



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Date 4/10/2012  
Date 4/12/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	26.1492	6.0585	158.4249	1.2920	0.0000	0.0000	1.2920
2	Top Flange	15.2674	6.0585	92.4977	186.7990	0.0000	0.0000	186.7990
3	Bottom Flange	15.2674	6.0585	92.4977	186.7990	0.0000	0.0000	186.7990
<b>Total</b>		<b>56.68</b>		<b>343.42</b>	<b>374.89</b>		<b>0.00</b>	<b>374.89</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0625	12.1170	-0.7573	6.0585	-4.5882	-9.2658	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>-0.76</b>		<b>-4.59</b>	<b>-9.27</b>		<b>0.00</b>	<b>-9.27</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.0585 in	S <sub>right</sub> =	61.88 in <sup>3</sup>	x-bar =	6.0585 in	S <sub>right</sub> =	60.35 in <sup>3</sup>
I <sub>y</sub> =	374.89 in <sup>4</sup>	S <sub>left</sub> =	61.88 in <sup>3</sup>	I <sub>y</sub> =	365.62 in <sup>4</sup>	S <sub>left</sub> =	60.35 in <sup>3</sup>
C <sub>right</sub> =	6.0585 in	A =	56.6840 in <sup>2</sup>	C <sub>right</sub> =	6.0585 in	A =	55.9267 in <sup>2</sup>
C <sub>left</sub> =	6.0585 in	r <sub>y</sub> =	2.5717 in	C <sub>left</sub> =	6.0585 in	r <sub>y</sub> =	2.5569 in

Non-composite Capacities*		
	AB	AI
M	2089.24 k-ft	2055.63 k-ft
V	500.50 k	500.50 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



Made By DMP  
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Date 4/10/2012  
Date 4/12/2012

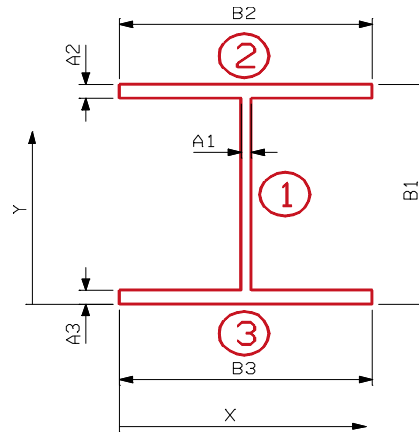
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions:**

- $A_1 = t_w = 0.7700$  in
- $B_1 = d = 36.4800$  in
- $A_2 = t_f = 1.2600$  in
- $B_2 = b_f = 12.1170$  in
- $A_3 = t_f = 1.2600$  in
- $B_3 = b_f = 12.1170$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Floorbeam A3-A4**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	26.1492	18.2400	476.9614	2513.1159	0.0000	0.0000	2513.1159
2	Top Flange	15.2674	35.8500	547.3370	2.0199	17.6100	4734.6117	4736.6316
3	Bottom Flange	15.2674	0.6300	9.6185	2.0199	17.6100	4734.6117	4736.6316
<b>Total</b>		<b>56.68</b>		<b>1033.92</b>	<b>2517.16</b>		<b>9469.22</b>	<b>11986.38</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	12.1170	0.0625	-0.7573	0.0313	-0.0237	-0.0002	18.4553	-257.9397
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>-0.76</b>		<b>-0.02</b>	<b>0.00</b>		<b>-257.94</b>	<b>-257.94</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	18.2400 in	$S_{top} =$	657.15 in <sup>3</sup>	y-bar =	18.4866 in	$S_{top} =$	651.82 in <sup>3</sup>
$I_x =$	11986.38 in <sup>4</sup>	$S_{bott.} =$	657.15 in <sup>3</sup>	$I_x =$	11728.44 in <sup>4</sup>	$S_{bott.} =$	634.43 in <sup>3</sup>
$C_{top} =$	18.2400 in	A =	56.6840 in <sup>2</sup>	$C_{top} =$	17.9934 in	A =	55.9267 in <sup>2</sup>
$C_{bottom} =$	18.2400 in	$r_x =$	14.5416 in	$C_{bottom} =$	18.4866 in	$r_x =$	14.4814 in
J =	21.3270 in <sup>4</sup>	Z =	759.73 in <sup>3</sup>			Z =	747.50 in <sup>3</sup>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	26.1492	6.0585	158.4249	1.2920	0.0000	0.0000	1.2920
2	Top Flange	15.2674	6.0585	92.4977	186.7990	0.0000	0.0000	186.7990
3	Bottom Flange	15.2674	6.0585	92.4977	186.7990	0.0000	0.0000	186.7990
<b>Total</b>		<b>56.68</b>		<b>343.42</b>	<b>374.89</b>		<b>0.00</b>	<b>374.89</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0625	12.1170	-0.7573	6.0585	-4.5882	-9.2658	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>-0.76</b>		<b>-4.59</b>	<b>-9.27</b>		<b>0.00</b>	<b>-9.27</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.0585 in	S <sub>right</sub> =	61.88 in <sup>3</sup>	x-bar =	6.0585 in	S <sub>right</sub> =	60.35 in <sup>3</sup>
I <sub>y</sub> =	374.89 in <sup>4</sup>	S <sub>left</sub> =	61.88 in <sup>3</sup>	I <sub>y</sub> =	365.62 in <sup>4</sup>	S <sub>left</sub> =	60.35 in <sup>3</sup>
C <sub>right</sub> =	6.0585 in	A =	56.6840 in <sup>2</sup>	C <sub>right</sub> =	6.0585 in	A =	55.9267 in <sup>2</sup>
C <sub>left</sub> =	6.0585 in	r <sub>y</sub> =	2.5717 in	C <sub>left</sub> =	6.0585 in	r <sub>y</sub> =	2.5569 in

Non-composite Capacities*		
	AB	AI
M	2089.24 k-ft	2055.63 k-ft
V	500.50 k	500.50 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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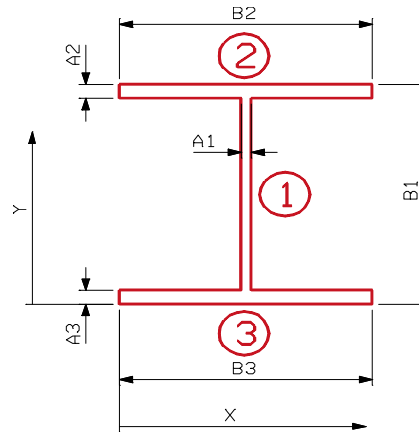
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions:**

- $A_1 = t_w = 0.7700$  in
- $B_1 = d = 36.4800$  in
- $A_2 = t_f = 1.2600$  in
- $B_2 = b_f = 12.1170$  in
- $A_3 = t_f = 1.2600$  in
- $B_3 = b_f = 12.1170$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Floorbeam A5**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	26.1492	18.2400	476.9614	2513.1159	0.0000	0.0000	2513.1159
2	Top Flange	15.2674	35.8500	547.3370	2.0199	17.6100	4734.6117	4736.6316
3	Bottom Flange	15.2674	0.6300	9.6185	2.0199	17.6100	4734.6117	4736.6316
<b>Total</b>		<b>56.68</b>		<b>1033.92</b>	<b>2517.16</b>		<b>9469.22</b>	<b>11986.38</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	12.1170	0.0625	-0.7573	0.0313	-0.0237	-0.0002	18.9052	-270.6685
2	5.6735	0.1250	-0.7092	1.1975	-0.8493	-0.0009	17.7390	-223.1603
3	5.6735	0.1250	-0.7092	1.1975	-0.8493	-0.0009	17.7390	-223.1603
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>-2.18</b>		<b>-1.72</b>	<b>0.00</b>		<b>-716.99</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	18.2400 in	$S_{top}$ =	657.15 in <sup>3</sup>	y-bar =	18.9365 in	$S_{top}$ =	642.37 in <sup>3</sup>
$I_x$ =	11986.38 in <sup>4</sup>	$S_{bott.}$ =	657.15 in <sup>3</sup>	$I_x$ =	11269.39 in <sup>4</sup>	$S_{bott.}$ =	595.12 in <sup>3</sup>
$C_{top}$ =	18.2400 in	A =	56.6840 in <sup>2</sup>	$C_{top}$ =	17.5435 in	A =	54.5084 in <sup>2</sup>
$C_{bottom}$ =	18.2400 in	$r_x$ =	14.5416 in	$C_{bottom}$ =	18.9365 in	$r_x$ =	14.3787 in
J =	21.3270 in <sup>4</sup>	Z =	759.73 in <sup>3</sup>			Z =	721.93 in <sup>3</sup>





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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	26.1492	6.0585	158.4249	1.2920	0.0000	0.0000	1.2920
2	Top Flange	15.2674	6.0585	92.4977	186.7990	0.0000	0.0000	186.7990
3	Bottom Flange	15.2674	6.0585	92.4977	186.7990	0.0000	0.0000	186.7990
<b>Total</b>		<b>56.68</b>		<b>343.42</b>	<b>374.89</b>		<b>0.00</b>	<b>374.89</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0625	12.1170	-0.7573	6.0585	-4.5882	-9.2658	0.0000	0.0000
2	0.1250	5.6735	-0.7092	2.8368	-2.0118	-1.9023	3.2218	-7.3611
3	0.1250	5.6735	-0.7092	9.2803	-6.5814	-1.9023	3.2218	-7.3611
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>-2.18</b>		<b>-13.18</b>	<b>-13.07</b>		<b>-14.72</b>	<b>-27.79</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.0585 in	S <sub>right</sub> =	61.88 in <sup>3</sup>	x-bar =	6.0585 in	S <sub>right</sub> =	57.29 in <sup>3</sup>
I <sub>y</sub> =	374.89 in <sup>4</sup>	S <sub>left</sub> =	61.88 in <sup>3</sup>	I <sub>y</sub> =	347.10 in <sup>4</sup>	S <sub>left</sub> =	57.29 in <sup>3</sup>
C <sub>right</sub> =	6.0585 in	A =	56.6840 in <sup>2</sup>	C <sub>right</sub> =	6.0585 in	A =	54.5084 in <sup>2</sup>
C <sub>left</sub> =	6.0585 in	r <sub>y</sub> =	2.5717 in	C <sub>left</sub> =	6.0585 in	r <sub>y</sub> =	2.5234 in

Non-composite Capacities*		
	AB	AI
M	2089.24 k-ft	1985.31 k-ft
V	500.50 k	500.50 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Rolled Beam

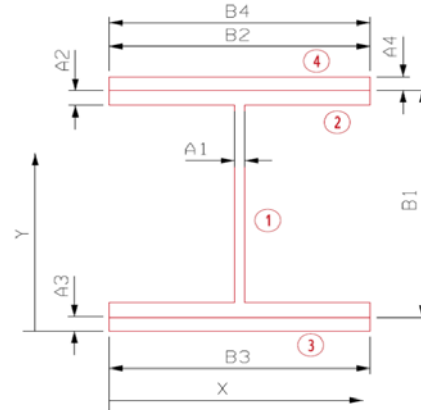
$A_1 = t_w = 0.7700$  in                       $d_o = 22.0000$  in  
 $A_2 = t_f = 1.2600$  in                       $d_o =$  stiffener spacing for shear check  
 $B_1 = d = 36.4800$  in                      Use "N/A" for no stiffeners  
 $B_2 = b_f = 12.1170$  in

Bottom Cover Plate

$A_3 = t = 0.5000$  in  
 $B_3 = b = 12.0000$  in

Top Cover Plate

$A_4 = t = 0.5000$  in  
 $B_4 = b = 12.0000$  in



**Floorbeam A6**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web Plate		26.1492	18.7400	490.0360	2513.1159	0.0000	0.0000	2513.1159
2	Top Flange		15.2674	36.3500	554.9707	2.0199	17.6100	4734.6117	4736.6316
	Bottom Flange		15.2674	1.1300	17.2522	2.0199	17.6100	4734.6117	4736.6316
3	Bottom Cover Plate		6.0000	0.2500	1.5000	0.1250	18.4900	2051.2806	2051.4056
4	Top Cover Plate		6.0000	37.2300	223.3800	0.1250	18.4900	2051.2806	2051.4056
<b>Total</b>			<b>68.68</b>		<b>1287.14</b>	<b>2517.41</b>		<b>13571.78</b>	<b>16089.19</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	12.0000	0.1875	-2.2500	0.0938	-0.2109	-0.0066	19.5922	-863.6718	-863.6784
2	0.1875	8.0000	-1.5000	5.7600	-8.6400	-8.0000	13.9259	-290.8979	-298.8979
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>-3.75</b>		<b>-8.85</b>	<b>-8.01</b>		<b>-1154.57</b>	<b>-1162.58</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	18.7400	in	S <sub>top</sub> = 858.55 in <sup>3</sup>	y-bar =	19.6859	in	S <sub>top</sub> = 838.85 in <sup>3</sup>
I <sub>x</sub> =	16089.19	in <sup>4</sup>	S <sub>bottom</sub> = 858.55 in <sup>3</sup>	I <sub>x</sub> =	14926.61	in <sup>4</sup>	S <sub>bottom</sub> = 758.24 in <sup>3</sup>
C <sub>top</sub> =	18.7400	in	A = 68.6840 in <sup>2</sup>	C <sub>top</sub> =	17.7941	in	A = 64.9340 in <sup>2</sup>
C <sub>bottom</sub> =	18.7400	in	r <sub>x</sub> = 15.3052 in	C <sub>bottom</sub> =	19.6859	in	r <sub>x</sub> = 15.1616 in
J =	22.3270		Z = 981.6052 in <sup>3</sup>				Z = 915.9700 in <sup>3</sup>



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Date 4/3/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web Plate		26.1492	6.0585	158.4249	1.2920	0.0000	0.0000	1.2920
2	Flange Plates		30.5348	6.0585	184.9953	373.5981	0.0000	0.0000	373.5981
3	Bottom Cover Plate		6.0000	6.0585	36.3510	72.0000	0.0000	0.0000	72.0000
4	Top Cover Plate		6.0000	6.0585	36.3510	72.0000	0.0000	0.0000	72.0000
<b>Total</b>			<b>68.68</b>		<b>416.12</b>	<b>518.89</b>		<b>0.00</b>	<b>518.89</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.1875	12.0000	-2.2500	6.0585	-13.6316	-27.0000	0.0067	-0.0001	-27.0001
2	8.0000	0.1875	-1.5000	6.3498	-9.5246	-0.0044	0.2980	-0.1332	-0.1376
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>-3.75</b>		<b>-23.16</b>	<b>-27.00</b>		<b>-0.13</b>	<b>-27.14</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.0585	in	S <sub>right</sub> = 85.65 in <sup>3</sup>	x-bar =	6.0518	in	S <sub>right</sub> = 81.17 in <sup>3</sup>
I <sub>y</sub> =	518.89	in <sup>4</sup>	S <sub>left</sub> = 85.65 in <sup>3</sup>	I <sub>y</sub> =	491.75	in <sup>4</sup>	S <sub>left</sub> = 81.26 in <sup>3</sup>
C <sub>right</sub> =	6.0585	in	A = 68.6840 in <sup>2</sup>	C <sub>right</sub> =	6.0585	in	A = 64.9340 in <sup>2</sup>
C <sub>left</sub> =	6.0585	in	r <sub>y</sub> = 2.7486 in	C <sub>left</sub> =	6.0518	in	r <sub>y</sub> = 2.7519 in

Non-composite Capacities*		
	AB	AI
M	2699.41 k-ft	2518.92 k-ft
V	500.50 k	500.50 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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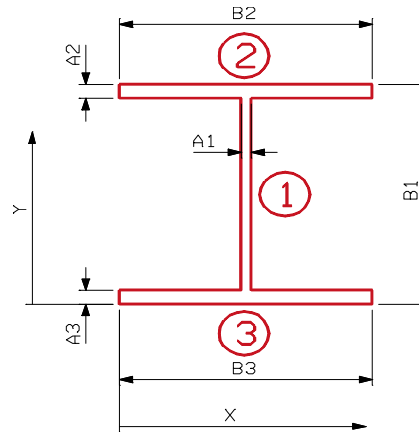
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions:**

- $A_1 = t_w = 0.7700$  in
- $B_1 = d = 36.4800$  in
- $A_2 = t_f = 1.2600$  in
- $B_2 = b_f = 12.1170$  in
- $A_3 = t_f = 1.2600$  in
- $B_3 = b_f = 12.1170$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Floorbeam B1**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	26.1492	18.2400	476.9614	2513.1159	0.0000	0.0000	2513.1159
2	Top Flange	15.2674	35.8500	547.3370	2.0199	17.6100	4734.6117	4736.6316
3	Bottom Flange	15.2674	0.6300	9.6185	2.0199	17.6100	4734.6117	4736.6316
<b>Total</b>		<b>56.68</b>		<b>1033.92</b>	<b>2517.16</b>		<b>9469.22</b>	<b>11986.38</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	12.1170	0.0625	-0.7573	0.0313	-0.0237	-0.0002	18.4553	-257.9397
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>-0.76</b>		<b>-0.02</b>	<b>0.00</b>		<b>-257.94</b>	<b>-257.94</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	18.2400 in	$S_{top} =$	657.15 in <sup>3</sup>	y-bar =	18.4866 in	$S_{top} =$	651.82 in <sup>3</sup>
$I_x =$	11986.38 in <sup>4</sup>	$S_{bottom} =$	657.15 in <sup>3</sup>	$I_x =$	11728.44 in <sup>4</sup>	$S_{bottom} =$	634.43 in <sup>3</sup>
$C_{top} =$	18.2400 in	A =	56.6840 in <sup>2</sup>	$C_{top} =$	17.9934 in	A =	55.9267 in <sup>2</sup>
$C_{bottom} =$	18.2400 in	$r_x =$	14.5416 in	$C_{bottom} =$	18.4866 in	$r_x =$	14.4814 in
J =	21.3270 in <sup>4</sup>	Z =	759.73 in <sup>3</sup>			Z =	747.50 in <sup>3</sup>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		26.1492	6.0585	158.4249	1.2920	0.0000	0.0000	1.2920
2	Top Flange		15.2674	6.0585	92.4977	186.7990	0.0000	0.0000	186.7990
3	Bottom Flange		15.2674	6.0585	92.4977	186.7990	0.0000	0.0000	186.7990
<b>Total</b>			<b>56.68</b>		<b>343.42</b>	<b>374.89</b>		<b>0.00</b>	<b>374.89</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0625	12.1170	-0.7573	6.0585	-4.5882	-9.2658	0.0000	0.0000	-9.2658
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>-0.76</b>		<b>-4.59</b>	<b>-9.27</b>		<b>0.00</b>	<b>-9.27</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	6.0585	in	S <sub>right</sub> =	61.88	in <sup>3</sup>	x-bar =	6.0585	in	S <sub>right</sub> =	60.35	in <sup>3</sup>
I <sub>y</sub> =	374.89	in <sup>4</sup>	S <sub>left</sub> =	61.88	in <sup>3</sup>	I <sub>y</sub> =	365.62	in <sup>4</sup>	S <sub>left</sub> =	60.35	in <sup>3</sup>
C <sub>right</sub> =	6.0585	in	A =	56.6840	in <sup>2</sup>	C <sub>right</sub> =	6.0585	in	A =	55.9267	in <sup>2</sup>
C <sub>left</sub> =	6.0585	in	r <sub>y</sub> =	2.5717	in	C <sub>left</sub> =	6.0585	in	r <sub>y</sub> =	2.5569	in

Non-composite Capacities*		
	AB	AI
M	2089.24 k-ft	2055.62 k-ft
V	500.50 k	500.50 k

\*Compact Section

F <sub>y</sub> =	<b>33.00 ksi</b>
------------------	------------------

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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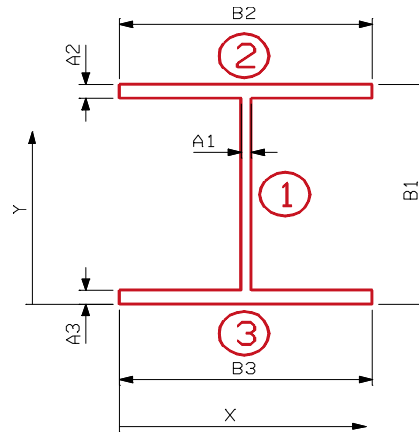
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions:**

- $A_1 = t_w = 0.7700$  in
- $B_1 = d = 36.4800$  in
- $A_2 = t_f = 1.2600$  in
- $B_2 = b_f = 12.1170$  in
- $A_3 = t_f = 1.2600$  in
- $B_3 = b_f = 12.1170$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**Floorbeam B3**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	26.1492	18.2400	476.9614	2513.1159	0.0000	0.0000	2513.1159
2	Top Flange	15.2674	35.8500	547.3370	2.0199	17.6100	4734.6117	4736.6316
3	Bottom Flange	15.2674	0.6300	9.6185	2.0199	17.6100	4734.6117	4736.6316
<b>Total</b>		<b>56.68</b>		<b>1033.92</b>	<b>2517.16</b>		<b>9469.22</b>	<b>11986.38</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	12.1170	0.0625	-0.7573	0.0313	-0.0237	-0.0002	18.2088	-251.0935
2	12.1170	0.0625	-0.7573	36.4488	-27.6031	-0.0002	18.2088	-251.0935
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>-1.51</b>		<b>-27.63</b>	<b>0.00</b>		<b>-502.19</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	18.2400 in	$S_{top} =$	657.15 in <sup>3</sup>	y-bar =	18.2400 in	$S_{top} =$	629.62 in <sup>3</sup>
$I_x =$	11986.38 in <sup>4</sup>	$S_{bott.} =$	657.15 in <sup>3</sup>	$I_x =$	11484.19 in <sup>4</sup>	$S_{bott.} =$	629.62 in <sup>3</sup>
$C_{top} =$	18.2400 in	A =	56.6840 in <sup>2</sup>	$C_{top} =$	18.2400 in	A =	55.1694 in <sup>2</sup>
$C_{bottom} =$	18.2400 in	$r_x =$	14.5416 in	$C_{bottom} =$	18.2400 in	$r_x =$	14.4278 in
J =	21.3270 in <sup>4</sup>	Z =	759.73 in <sup>3</sup>			Z =	735.60 in <sup>3</sup>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		26.1492	6.0585	158.4249	1.2920	0.0000	0.0000	1.2920
2	Top Flange		15.2674	6.0585	92.4977	186.7990	0.0000	0.0000	186.7990
3	Bottom Flange		15.2674	6.0585	92.4977	186.7990	0.0000	0.0000	186.7990
<b>Total</b>			<b>56.68</b>		<b>343.42</b>	<b>374.89</b>		<b>0.00</b>	<b>374.89</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0625	12.1170	-0.7573	6.0585	-4.5882	-9.2658	0.0000	0.0000	-9.2658
2	0.0625	12.1170	-0.7573	6.0585	-4.5882	-9.2658	0.0000	0.0000	-9.2658
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>-1.51</b>		<b>-9.18</b>	<b>-18.53</b>		<b>0.00</b>	<b>-18.53</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	6.0585	in	S <sub>right</sub> =	61.88	in <sup>3</sup>	x-bar =	6.0585	in	S <sub>right</sub> =	58.82	in <sup>3</sup>
I <sub>y</sub> =	374.89	in <sup>4</sup>	S <sub>left</sub> =	61.88	in <sup>3</sup>	I <sub>y</sub> =	356.36	in <sup>4</sup>	S <sub>left</sub> =	58.82	in <sup>3</sup>
C <sub>right</sub> =	6.0585	in	A =	56.6840	in <sup>2</sup>	C <sub>right</sub> =	6.0585	in	A =	55.1694	in <sup>2</sup>
C <sub>left</sub> =	6.0585	in	r <sub>y</sub> =	2.5717	in	C <sub>left</sub> =	6.0585	in	r <sub>y</sub> =	2.5415	in

Non-composite Capacities*		
	AB	AI
M	2089.24 k-ft	2022.89 k-ft
V	500.50 k	500.50 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Rolled Beam

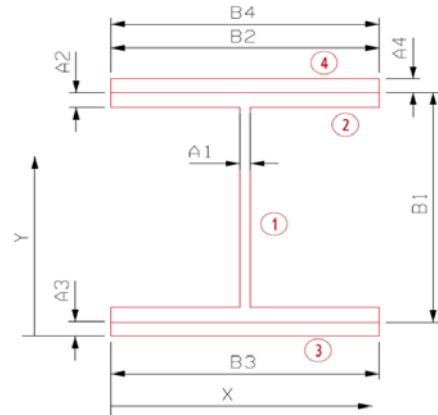
$A_1 = t_w = 0.7250$  in                       $d_o = 22.0000$  in  
 $A_2 = t_f = 1.1800$  in                       $d_o =$  stiffener spacing for shear check  
 $B_1 = d = 36.3200$  in                      Use "N/A" for no stiffeners  
 $B_2 = b_f = 12.0720$  in

Bottom Cover Plate

$A_3 = t = 0.0000$  in  
 $B_3 = b = 0.0000$  in

Top Cover Plate

$A_4 = t = 0.7500$  in  
 $B_4 = b = 12.0000$  in



Floorbeam C1

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web Plate	24.6210	18.1600	447.1174	2366.2455	2.6858	177.5988	2543.8443
2	Top Flange	14.2450	35.7300	508.9724	1.6529	14.8842	3155.8372	3157.4900
	Bottom Flange	14.2450	0.5900	8.4045	1.6529	20.2558	5844.6472	5846.3001
3	Bottom Cover Plate	0.0000	0.0000	0.0000	0.0000	20.8458	0.0000	0.0000
4	Top Cover Plate	9.0000	36.6950	330.2550	0.4219	15.8492	2260.7858	2261.2077
<b>Total</b>		<b>62.11</b>		<b>1294.75</b>	<b>2369.97</b>		<b>11438.87</b>	<b>13808.84</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	12.0720	0.0625	-0.7545	0.0313	-0.0236	-0.0002	20.8720	-328.6922
2	12.0720	0.0625	-0.7545	37.0388	-27.9457	-0.0002	16.1355	-196.4362
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>-1.51</b>		<b>-27.97</b>	<b>0.00</b>		<b>-525.13</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	20.8458	in	S <sub>top</sub> =	851.12	in <sup>3</sup>	y-bar =	20.9033
I <sub>x</sub> =	13808.84	in <sup>4</sup>	S <sub>bott.</sub> =	662.43	in <sup>3</sup>	I <sub>x</sub> =	13283.71
C <sub>top</sub> =	16.2242	in	A =	62.1109	in <sup>2</sup>	C <sub>top</sub> =	16.1667
C <sub>bottom</sub> =	20.8458	in	r <sub>x</sub> =	14.9106	in	C <sub>bottom</sub> =	20.9033
J =	19.2244		Z =	848.4841	in <sup>3</sup>	Z =	824.3558





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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1	Web Plate	24.6210	6.0360	148.6124	1.0785	0.0000	0.0000	1.0785	
2	Flange Plates	28.4899	6.0360	171.9652	345.9939	0.0000	0.0000	345.9939	
3	Bottom Cover Plate	0.0000	6.0360	0.0000	0.0000	0.0000	0.0000	0.0000	
4	Top Cover Plate	9.0000	6.0360	54.3240	108.0000	0.0000	0.0000	108.0000	
<b>Total</b>		<b>62.11</b>		<b>374.90</b>	<b>455.07</b>		<b>0.00</b>	<b>455.07</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0625	12.0720	-0.7545	6.0360	-4.5542	-9.1630	0.0000	0.0000	-9.1630
2	0.0625	12.0720	-0.7545	6.0360	-4.5542	-9.1630	0.0000	0.0000	-9.1630
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>-1.51</b>		<b>-9.11</b>	<b>-18.33</b>		<b>0.00</b>	<b>-18.33</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.0360	in	S <sub>right</sub> = 75.39 in <sup>3</sup>	x-bar =	6.0360	in	S <sub>right</sub> = 72.36 in <sup>3</sup>
I <sub>y</sub> =	455.07	in <sup>4</sup>	S <sub>left</sub> = 75.39 in <sup>3</sup>	I <sub>y</sub> =	436.75	in <sup>4</sup>	S <sub>left</sub> = 72.36 in <sup>3</sup>
C <sub>right</sub> =	6.0360	in	A = 62.1109 in <sup>2</sup>	C <sub>right</sub> =	6.0360	in	A = 60.6019 in <sup>2</sup>
C <sub>left</sub> =	6.0360	in	r <sub>y</sub> = 2.7068 in	C <sub>left</sub> =	6.0360	in	r <sub>y</sub> = 2.6845 in

Non-composite Capacities*		
	AB	AI
M	#####	2266.98 k-ft
V	471.25 k	471.25 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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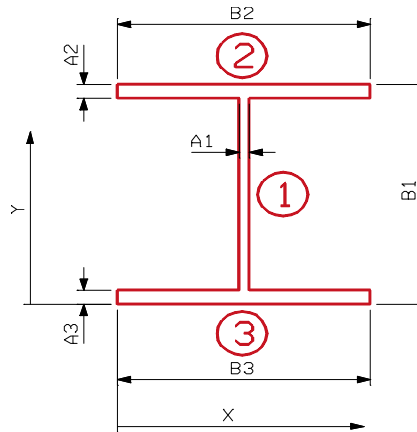
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions:**

- $A_1 = t_w = 0.7250$  in
- $B_1 = d = 36.3200$  in
- $A_2 = t_f = 1.1800$  in
- $B_2 = b_f = 12.0720$  in
- $A_3 = t_f = 1.1800$  in
- $B_3 = b_f = 12.0720$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



Floorbeam C2-C6

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	24.6210	18.1600	447.1174	2366.2455	0.0000	0.0000	2366.2455
2	Top Flange	14.2450	35.7300	508.9724	1.6529	17.5700	4397.4890	4399.1418
3	Bottom Flange	14.2450	0.5900	8.4045	1.6529	17.5700	4397.4890	4399.1418
<b>Total</b>		<b>53.11</b>		<b>964.49</b>	<b>2369.55</b>		<b>8794.98</b>	<b>11164.53</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	12.0720	0.0625	-0.7545	0.0313	-0.0236	-0.0002	18.1288	-247.9676
2	12.0720	0.0625	-0.7545	36.2888	-27.3799	-0.0002	18.1288	-247.9676
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>-1.51</b>		<b>-27.40</b>	<b>0.00</b>		<b>-495.94</b>	<b>-495.94</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	18.1600 in	$S_{top} =$	614.79 in <sup>3</sup>	y-bar =	18.1600 in	$S_{top} =$	587.48 in <sup>3</sup>
$I_x =$	11164.53 in <sup>4</sup>	$S_{bottom} =$	614.79 in <sup>3</sup>	$I_x =$	10668.59 in <sup>4</sup>	$S_{bottom} =$	587.48 in <sup>3</sup>
$C_{top} =$	18.1600 in	A =	53.1109 in <sup>2</sup>	$C_{top} =$	18.1600 in	A =	51.6019 in <sup>2</sup>
$C_{bottom} =$	18.1600 in	$r_x =$	14.4987 in	$C_{bottom} =$	18.1600 in	$r_x =$	14.3787 in
J =	17.5369 in <sup>4</sup>	Z =	709.60 in <sup>3</sup>			Z =	685.47 in <sup>3</sup>



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Date 4/10/2012  
Date 4/12/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		24.6210	6.0360	148.6124	1.0785	0.0000	0.0000	1.0785
2	Top Flange		14.2450	6.0360	85.9826	172.9969	0.0000	0.0000	172.9969
3	Bottom Flange		14.2450	6.0360	85.9826	172.9969	0.0000	0.0000	172.9969
<b>Total</b>			<b>53.11</b>		<b>320.58</b>	<b>347.07</b>		<b>0.00</b>	<b>347.07</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0625	12.0720	-0.7545	6.0360	-4.5542	-9.1630	0.0000	0.0000	-9.1630
2	0.0625	12.0720	-0.7545	6.0360	-4.5542	-9.1630	0.0000	0.0000	-9.1630
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>-1.51</b>		<b>-9.11</b>	<b>-18.33</b>		<b>0.00</b>	<b>-18.33</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	6.0360	in	S <sub>right</sub> =	57.50	in <sup>3</sup>	x-bar =	6.0360	in	S <sub>right</sub> =	54.46	in <sup>3</sup>
I <sub>y</sub> =	347.07	in <sup>4</sup>	S <sub>left</sub> =	57.50	in <sup>3</sup>	I <sub>y</sub> =	328.75	in <sup>4</sup>	S <sub>left</sub> =	54.46	in <sup>3</sup>
C <sub>right</sub> =	6.0360	in	A =	53.1109	in <sup>2</sup>	C <sub>right</sub> =	6.0360	in	A =	51.6019	in <sup>2</sup>
C <sub>left</sub> =	6.0360	in	r <sub>y</sub> =	2.5563	in	C <sub>left</sub> =	6.0360	in	r <sub>y</sub> =	2.5240	in

Non-composite Capacities*		
	AB	AI
M	1951.40 k-ft	1885.05 k-ft
V	471.25 k	471.25 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/15/2012  
Date 4/3/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Rolled Beam

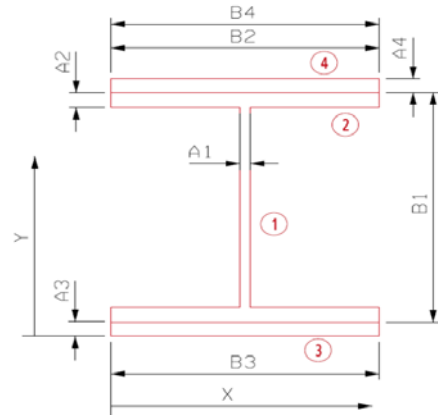
$A_1 = t_w = 0.7250$  in                       $d_o = 28.3125$  in  
 $A_2 = t_f = 1.1800$  in                       $d_o =$  stiffener spacing for shear check  
 $B_1 = d = 36.3200$  in                      Use "N/A" for no stiffeners  
 $B_2 = b_f = 12.0720$  in

Bottom Cover Plate

$A_3 = t = 0.0000$  in  
 $B_3 = b = 0.0000$  in

Top Cover Plate

$A_4 = t = 0.7500$  in  
 $B_4 = b = 12.0000$  in



Floorbeam C9

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web Plate		24.6210	18.1600	447.1174	2366.2455	2.6858	177.5988	2543.8443
2	Top Flange		14.2450	35.7300	508.9724	1.6529	14.8842	3155.8372	3157.4900
	Bottom Flange		14.2450	0.5900	8.4045	1.6529	20.2558	5844.6472	5846.3001
3	Bottom Cover Plate		0.0000	0.0000	0.0000	0.0000	20.8458	0.0000	0.0000
4	Top Cover Plate		9.0000	36.6950	330.2550	0.4219	15.8492	2260.7858	2261.2077
<b>Total</b>			<b>62.11</b>		<b>1294.75</b>	<b>2369.97</b>		<b>11438.87</b>	<b>13808.84</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	20.8458 in	S <sub>top</sub> =	851.12 in <sup>3</sup>	y-bar =	20.8458 in	S <sub>top</sub> =	851.12 in <sup>3</sup>
I <sub>x</sub> =	13808.84 in <sup>4</sup>	S <sub>bott.</sub> =	662.43 in <sup>3</sup>	I <sub>x</sub> =	13808.84 in <sup>4</sup>	S <sub>bott.</sub> =	662.43 in <sup>3</sup>
C <sub>top</sub> =	16.2242 in	A =	62.1109 in <sup>2</sup>	C <sub>top</sub> =	16.2242 in	A =	62.1109 in <sup>2</sup>
C <sub>bottom</sub> =	20.8458 in	r <sub>x</sub> =	14.9106 in	C <sub>bottom</sub> =	20.8458 in	r <sub>x</sub> =	14.9106 in
J =	19.2244	Z =	848.4841 in <sup>3</sup>	Z =	848.4841 in <sup>3</sup>		



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Date 3/15/2012  
Date 4/3/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1	Web Plate	24.6210	6.0360	148.6124	1.0785	0.0000	0.0000	1.0785	
2	Flange Plates	28.4899	6.0360	171.9652	345.9939	0.0000	0.0000	345.9939	
3	Bottom Cover Plate	0.0000	6.0360	0.0000	0.0000	0.0000	0.0000	0.0000	
4	Top Cover Plate	9.0000	6.0360	54.3240	108.0000	0.0000	0.0000	108.0000	
<b>Total</b>		<b>62.11</b>		<b>374.90</b>	<b>455.07</b>		<b>0.00</b>	<b>455.07</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.0360 in	S <sub>right</sub> =	75.39 in <sup>3</sup>	x-bar =	6.0360 in	S <sub>right</sub> =	75.39 in <sup>3</sup>
I <sub>y</sub> =	455.07 in <sup>4</sup>	S <sub>left</sub> =	75.39 in <sup>3</sup>	I <sub>y</sub> =	455.07 in <sup>4</sup>	S <sub>left</sub> =	75.39 in <sup>3</sup>
C <sub>right</sub> =	6.0360 in	A =	62.1109 in <sup>2</sup>	C <sub>right</sub> =	6.0360 in	A =	62.1109 in <sup>2</sup>
C <sub>left</sub> =	6.0360 in	r <sub>y</sub> =	2.7068 in	C <sub>left</sub> =	6.0360 in	r <sub>y</sub> =	2.7068 in

Non-composite Capacities*		
	AB	AI
M	#####	2333.33 k-ft
V	471.25 k	471.25 k

\*Noncompact Section

F <sub>y</sub> =	33.00 ksi
------------------	-----------

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/15/2012  
Date 4/3/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Rolled Beam

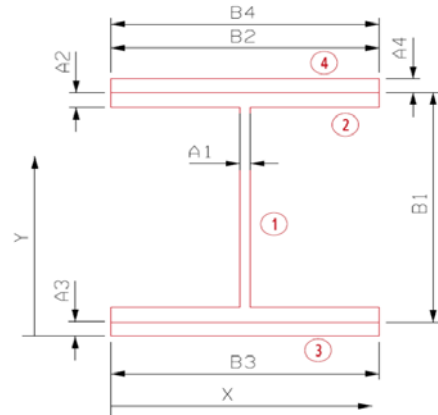
$A_1 = t_w = 0.7700$  in                       $d_o = 23.2500$  in  
 $A_2 = t_f = 1.2600$  in                       $d_o =$  stiffener spacing for shear check  
 $B_1 = d = 36.4800$  in                      Use "N/A" for no stiffeners  
 $B_2 = b_f = 12.1170$  in

Bottom Cover Plate

$A_3 = t = 0.0000$  in  
 $B_3 = b = 0.0000$  in

Top Cover Plate

$A_4 = t = 0.7500$  in  
 $B_4 = b = 12.0000$  in



Floorbeam E1

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web Plate	26.1492	18.2400	476.9614	2513.1159	2.5506	170.1178	2683.2337
2	Top Flange	15.2674	35.8500	547.3370	2.0199	15.0594	3462.4209	3464.4408
	Bottom Flange	15.2674	0.6300	9.6185	2.0199	20.1606	6205.4518	6207.4716
3	Bottom Cover Plate	0.0000	0.0000	0.0000	0.0000	20.7906	0.0000	0.0000
4	Top Cover Plate	9.0000	36.8550	331.6950	0.4219	16.0644	2322.5789	2323.0007
<b>Total</b>		<b>65.68</b>		<b>1365.61</b>	<b>2517.58</b>		<b>12160.57</b>	<b>14678.15</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	20.7906 in	$S_{top} =$	892.86 in <sup>3</sup>	y-bar =	20.7906 in	$S_{top} =$	892.86 in <sup>3</sup>
$I_x =$	14678.15 in <sup>4</sup>	$S_{bott.} =$	706.00 in <sup>3</sup>	$I_x =$	14678.15 in <sup>4</sup>	$S_{bott.} =$	706.00 in <sup>3</sup>
$C_{top} =$	16.4394 in	A =	65.6840 in <sup>2</sup>	$C_{top} =$	16.4394 in	A =	65.6840 in <sup>2</sup>
$C_{bottom} =$	20.7906 in	$r_x =$	14.9488 in	$C_{bottom} =$	20.7906 in	$r_x =$	14.9488 in
J =	23.0145	Z =	900.9615 in <sup>3</sup>	Z =	900.9615 in <sup>3</sup>		



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Date 3/15/2012  
Date 4/3/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1	Web Plate	26.1492	6.0585	158.4249	1.2920	0.0000	0.0000	1.2920	
2	Flange Plates	30.5348	6.0585	184.9953	373.5981	0.0000	0.0000	373.5981	
3	Bottom Cover Plate	0.0000	6.0585	0.0000	0.0000	0.0000	0.0000	0.0000	
4	Top Cover Plate	9.0000	6.0585	54.5265	108.0000	0.0000	0.0000	108.0000	
<b>Total</b>		<b>65.68</b>		<b>397.95</b>	<b>482.89</b>		<b>0.00</b>	<b>482.89</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.0585	in	S <sub>right</sub> = 79.70 in <sup>3</sup>	x-bar =	6.0585	in	S <sub>right</sub> = 79.70 in <sup>3</sup>
I <sub>y</sub> =	482.89	in <sup>4</sup>	S <sub>left</sub> = 79.70 in <sup>3</sup>	I <sub>y</sub> =	482.89	in <sup>4</sup>	S <sub>left</sub> = 79.70 in <sup>3</sup>
C <sub>right</sub> =	6.0585	in	A = 65.6840 in <sup>2</sup>	C <sub>right</sub> =	6.0585	in	A = 65.6840 in <sup>2</sup>
C <sub>left</sub> =	6.0585	in	r <sub>y</sub> = 2.7114 in	C <sub>left</sub> =	6.0585	in	r <sub>y</sub> = 2.7114 in

Non-composite Capacities*		
	AB	AI
M	#####	2477.64 k-ft
V	500.50 k	500.50 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/15/2012  
Date 4/3/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Rolled Beam

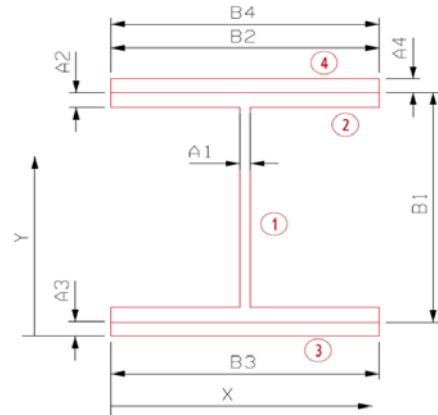
$A_1 = t_w = 0.7700$  in                       $d_o = 31.3125$  in  
 $A_2 = t_f = 1.2600$  in                       $d_o =$  stiffener spacing for shear check  
 $B_1 = d = 36.4800$  in                      Use "N/A" for no stiffeners  
 $B_2 = b_f = 12.1170$  in

Bottom Cover Plate

$A_3 = t = 0.7500$  in  
 $B_3 = b = 12.0000$  in

Top Cover Plate

$A_4 = t = 0.7500$  in  
 $B_4 = b = 12.0000$  in



Floorbeam E6

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web Plate	26.1492	18.9900	496.5733	2513.1159	0.0000	0.0000	2513.1159
2	Top Flange	15.2674	36.6000	558.7876	2.0199	17.6100	4734.6117	4736.6316
	Bottom Flange	15.2674	1.3800	21.0690	2.0199	17.6100	4734.6117	4736.6316
3	Bottom Cover Plate	9.0000	0.3750	3.3750	0.4219	18.6150	3118.6640	3119.0859
4	Top Cover Plate	9.0000	37.6050	338.4450	0.4219	18.6150	3118.6640	3119.0859
<b>Total</b>		<b>74.68</b>		<b>1418.25</b>	<b>2518.00</b>		<b>15706.55</b>	<b>18224.55</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	18.9900 in	S <sub>top</sub> =	959.69 in <sup>3</sup>	y-bar =	18.9900 in	S <sub>top</sub> =	959.69 in <sup>3</sup>
I <sub>x</sub> =	18224.55 in <sup>4</sup>	S <sub>bott.</sub> =	959.69 in <sup>3</sup>	I <sub>x</sub> =	18224.55 in <sup>4</sup>	S <sub>bott.</sub> =	959.69 in <sup>3</sup>
C <sub>top</sub> =	18.9900 in	A =	74.6840 in <sup>2</sup>	C <sub>top</sub> =	18.9900 in	A =	74.6840 in <sup>2</sup>
C <sub>bottom</sub> =	18.9900 in	r <sub>x</sub> =	15.6212 in	C <sub>bottom</sub> =	18.9900 in	r <sub>x</sub> =	15.6212 in
J =	24.7020	Z =	1094.7952 in <sup>3</sup>	J =	24.7020	Z =	1094.7952 in <sup>3</sup>





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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1	Web Plate	26.1492	6.0585	158.4249	1.2920	0.0000	0.0000	1.2920	
2	Flange Plates	30.5348	6.0585	184.9953	373.5981	0.0000	0.0000	373.5981	
3	Bottom Cover Plate	9.0000	6.0585	54.5265	108.0000	0.0000	0.0000	108.0000	
4	Top Cover Plate	9.0000	6.0585	54.5265	108.0000	0.0000	0.0000	108.0000	
<b>Total</b>		<b>74.68</b>		<b>452.47</b>	<b>590.89</b>		<b>0.00</b>	<b>590.89</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.0585	in	S <sub>right</sub> = 97.53 in <sup>3</sup>	x-bar =	6.0585	in	S <sub>right</sub> = 97.53 in <sup>3</sup>
I <sub>y</sub> =	590.89	in <sup>4</sup>	S <sub>left</sub> = 97.53 in <sup>3</sup>	I <sub>y</sub> =	590.89	in <sup>4</sup>	S <sub>left</sub> = 97.53 in <sup>3</sup>
C <sub>right</sub> =	6.0585	in	A = 74.6840 in <sup>2</sup>	C <sub>right</sub> =	6.0585	in	A = 74.6840 in <sup>2</sup>
C <sub>left</sub> =	6.0585	in	r <sub>y</sub> = 2.8128 in	C <sub>left</sub> =	6.0585	in	r <sub>y</sub> = 2.8128 in

Non-composite Capacities*		
	AB	AI
M	#####	3010.69 k-ft
V	500.50 k	500.50 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 4/3/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Rolled Beam

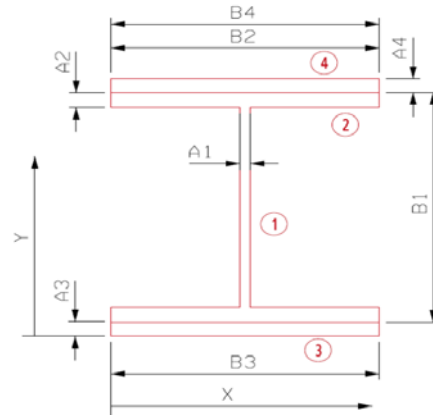
$A_1 = t_w = 0.7700$  in                       $d_o = 23.2500$  in  
 $A_2 = t_f = 1.2600$  in                       $d_o =$  stiffener spacing for shear check  
 $B_1 = d = 36.4800$  in                      Use "N/A" for no stiffeners  
 $B_2 = b_f = 12.1170$  in

Bottom Cover Plate

$A_3 = t = 0.7500$  in  
 $B_3 = b = 12.0000$  in

Top Cover Plate

$A_4 = t = 0.7500$  in  
 $B_4 = b = 12.0000$  in



Floorbeam G1

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web Plate		26.1492	18.9900	496.5733	2513.1159	0.0000	0.0000	2513.1159
2	Top Flange		15.2674	36.6000	558.7876	2.0199	17.6100	4734.6117	4736.6316
	Bottom Flange		15.2674	1.3800	21.0690	2.0199	17.6100	4734.6117	4736.6316
3	Bottom Cover Plate		9.0000	0.3750	3.3750	0.4219	18.6150	3118.6640	3119.0859
4	Top Cover Plate		9.0000	37.6050	338.4450	0.4219	18.6150	3118.6640	3119.0859
<b>Total</b>			<b>74.68</b>		<b>1418.25</b>	<b>2518.00</b>		<b>15706.55</b>	<b>18224.55</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	18.9900 in	S <sub>top</sub> =	959.69 in <sup>3</sup>	y-bar =	18.9900 in	S <sub>top</sub> =	959.69 in <sup>3</sup>
I <sub>x</sub> =	18224.55 in <sup>4</sup>	S <sub>bott.</sub> =	959.69 in <sup>3</sup>	I <sub>x</sub> =	18224.55 in <sup>4</sup>	S <sub>bott.</sub> =	959.69 in <sup>3</sup>
C <sub>top</sub> =	18.9900 in	A =	74.6840 in <sup>2</sup>	C <sub>top</sub> =	18.9900 in	A =	74.6840 in <sup>2</sup>
C <sub>bottom</sub> =	18.9900 in	r <sub>x</sub> =	15.6212 in	C <sub>bottom</sub> =	18.9900 in	r <sub>x</sub> =	15.6212 in
J =	24.7020	Z =	1094.7952 in <sup>3</sup>	J =	24.7020	Z =	1094.7952 in <sup>3</sup>



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Date 4/3/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1	Web Plate	26.1492	6.0585	158.4249	1.2920	0.0000	0.0000	1.2920	
2	Flange Plates	30.5348	6.0585	184.9953	373.5981	0.0000	0.0000	373.5981	
3	Bottom Cover Plate	9.0000	6.0585	54.5265	108.0000	0.0000	0.0000	108.0000	
4	Top Cover Plate	9.0000	6.0585	54.5265	108.0000	0.0000	0.0000	108.0000	
<b>Total</b>		<b>74.68</b>		<b>452.47</b>	<b>590.89</b>		<b>0.00</b>	<b>590.89</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.0585	in	S <sub>right</sub> = 97.53 in <sup>3</sup>	x-bar =	6.0585	in	S <sub>right</sub> = 97.53 in <sup>3</sup>
I <sub>y</sub> =	590.89	in <sup>4</sup>	S <sub>left</sub> = 97.53 in <sup>3</sup>	I <sub>y</sub> =	590.89	in <sup>4</sup>	S <sub>left</sub> = 97.53 in <sup>3</sup>
C <sub>right</sub> =	6.0585	in	A = 74.6840 in <sup>2</sup>	C <sub>right</sub> =	6.0585	in	A = 74.6840 in <sup>2</sup>
C <sub>left</sub> =	6.0585	in	r <sub>y</sub> = 2.8128 in	C <sub>left</sub> =	6.0585	in	r <sub>y</sub> = 2.8128 in

Non-composite Capacities*		
	AB	AI
M	#####	3010.69 k-ft
V	500.50 k	500.50 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 4/3/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Rolled Beam

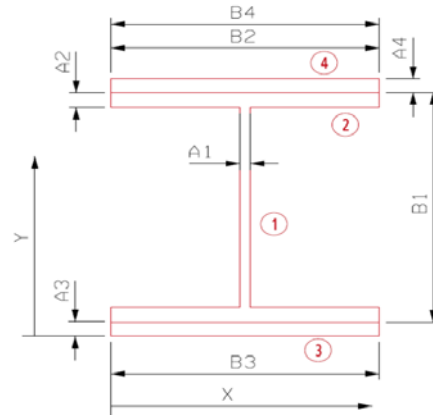
$A_1 = t_w = 0.7250$  in                       $d_o = 27.5000$  in  
 $A_2 = t_f = 1.1800$  in                       $d_o =$  stiffener spacing for shear check  
 $B_1 = d = 36.3200$  in                      Use "N/A" for no stiffeners  
 $B_2 = b_f = 12.0720$  in

Bottom Cover Plate

$A_3 = t = 0.0000$  in  
 $B_3 = b = 0.0000$  in

Top Cover Plate

$A_4 = t = 0.5000$  in  
 $B_4 = b = 12.0000$  in



Floorbeam G6, H1

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web Plate	24.6210	18.1600	447.1174	2366.2455	1.8687	85.9766	2452.2221
2	Top Flange	14.2450	35.7300	508.9724	1.6529	15.7013	3511.8261	3513.4789
	Bottom Flange	14.2450	0.5900	8.4045	1.6529	19.4387	5382.6387	5384.2916
3	Bottom Cover Plate	0.0000	0.0000	0.0000	0.0000	20.0287	0.0000	0.0000
4	Top Cover Plate	6.0000	36.5700	219.4200	0.1250	16.5413	1641.6896	1641.8146
<b>Total</b>		<b>59.11</b>		<b>1183.91</b>	<b>2369.68</b>		<b>10622.13</b>	<b>12991.81</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	20.0287	in	S <sub>top</sub> = 773.72 in <sup>3</sup>	y-bar =	20.0287	in	S <sub>top</sub> = 773.72 in <sup>3</sup>
I <sub>x</sub> =	12991.81	in <sup>4</sup>	S <sub>bott.</sub> = 648.66 in <sup>3</sup>	I <sub>x</sub> =	12991.81	in <sup>4</sup>	S <sub>bott.</sub> = 648.66 in <sup>3</sup>
C <sub>top</sub> =	16.7913	in	A = 59.1109 in <sup>2</sup>	C <sub>top</sub> =	16.7913	in	A = 59.1109 in <sup>2</sup>
C <sub>bottom</sub> =	20.0287	in	r <sub>x</sub> = 14.8252 in	C <sub>bottom</sub> =	20.0287	in	r <sub>x</sub> = 14.8252 in
J =	18.0369		Z = 807.6464 in <sup>3</sup>	J =	18.0369		Z = 807.6464 in <sup>3</sup>



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Date 3/15/2012  
Date 4/3/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1	Web Plate	24.6210	6.0360	148.6124	1.0785	0.0000	0.0000	1.0785	
2	Flange Plates	28.4899	6.0360	171.9652	345.9939	0.0000	0.0000	345.9939	
3	Bottom Cover Plate	0.0000	6.0360	0.0000	0.0000	0.0000	0.0000	0.0000	
4	Top Cover Plate	6.0000	6.0360	36.2160	72.0000	0.0000	0.0000	72.0000	
<b>Total</b>		<b>59.11</b>		<b>356.79</b>	<b>419.07</b>		<b>0.00</b>	<b>419.07</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	6.0360	in	S <sub>right</sub> =	69.43	in <sup>3</sup>	x-bar =	6.0360	in	S <sub>right</sub> =	69.43	in <sup>3</sup>
I <sub>y</sub> =	419.07	in <sup>4</sup>	S <sub>left</sub> =	69.43	in <sup>3</sup>	I <sub>y</sub> =	419.07	in <sup>4</sup>	S <sub>left</sub> =	69.43	in <sup>3</sup>
C <sub>right</sub> =	6.0360	in	A =	59.1109	in <sup>2</sup>	C <sub>right</sub> =	6.0360	in	A =	59.1109	in <sup>2</sup>
C <sub>left</sub> =	6.0360	in	r <sub>y</sub> =	2.6626	in	C <sub>left</sub> =	6.0360	in	r <sub>y</sub> =	2.6626	in

Non-composite Capacities*		
	AB	AI
M	#####	2221.03 k-ft
V	471.25 k	471.25 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
------------------	-----------

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/15/2012  
Date 4/3/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: CUY-2-1441 Revised CTG 4/30/2012

**Element Dimensions (without Section Losses):**

Rolled Beam

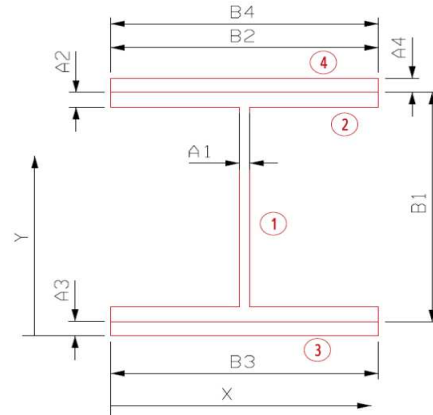
$A_1 = t_w = 0.7250$  in                       $d_o = 27.5000$  in  
 $A_2 = t_f = 1.1800$  in                       $d_o =$  stiffener spacing for shear check  
 $B_1 = d = 36.3200$  in                      Use "N/A" for no stiffeners  
 $B_2 = b_f = 12.0720$  in

Bottom Cover Plate

$A_3 = t = 0.0000$  in  
 $B_3 = b = 0.0000$  in

Top Cover Plate

$A_4 = t = 0.5000$  in  
 $B_4 = b = 12.0000$  in



Floorbeam H12

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web Plate		24.6210	18.1600	447.1174	2366.2455	1.8687	85.9766	2452.2221
2	Top Flange		14.2450	35.7300	508.9724	1.6529	15.7013	3511.8261	3513.4789
	Bottom Flange		14.2450	0.5900	8.4045	1.6529	19.4387	5382.6387	5384.2916
3	Bottom Cover Plate		0.0000	0.0000	0.0000	0.0000	20.0287	0.0000	0.0000
4	Top Cover Plate		6.0000	36.5700	219.4200	0.1250	16.5413	1641.6896	1641.8146
<b>Total</b>			<b>59.11</b>		<b>1183.91</b>	<b>2369.68</b>		<b>10622.13</b>	<b>12991.81</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	5.6735	0.5550	-3.1488	35.4175	-111.5224	-0.0808	13.2292	-551.0732	-551.1540
2	0.1250	12.0000	-1.5000	7.1800	-10.7700	-18.0000	15.0083	-337.8749	-355.8749
3	12.0720	0.5550	-6.7000	0.2775	-1.8592	-0.1720	21.9108	-3216.5466	-3216.7186
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>-11.35</b>		<b>-124.15</b>	<b>-18.25</b>		<b>-4105.49</b>	<b>-4123.75</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	20.0287	in	S <sub>top</sub> = 773.72 in <sup>3</sup>	y-bar =	22.1883	in	S <sub>top</sub> = 606.09 in <sup>3</sup>
I <sub>x</sub> =	12991.81	in <sup>4</sup>	S <sub>bott.</sub> = 648.66 in <sup>3</sup>	I <sub>x</sub> =	8868.06	in <sup>4</sup>	S <sub>bott.</sub> = 399.67 in <sup>3</sup>
C <sub>top</sub> =	16.7913	in	A = 59.1109 in <sup>2</sup>	C <sub>top</sub> =	14.6317	in	A = 47.7622 in <sup>2</sup>
C <sub>bottom</sub> =	20.0287	in	r <sub>x</sub> = 14.8252 in	C <sub>bottom</sub> =	22.1883	in	r <sub>x</sub> = 13.6261 in
J =	18.0369		Z = 807.6464 in <sup>3</sup>				Z = 587.2300 in <sup>3</sup>



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Date 3/15/2012  
Date 4/3/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441** Revised CTG 4/30/2012

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web Plate	24.6210	6.0360	148.6124	1.0785	0.0000	0.0000	1.0785
2	Flange Plates	28.4899	6.0360	171.9652	345.9939	0.0000	0.0000	345.9939
3	Bottom Cover Plate	0.0000	6.0360	0.0000	0.0000	0.0000	0.0000	0.0000
4	Top Cover Plate	6.0000	6.0360	36.2160	72.0000	0.0000	0.0000	72.0000
<b>Total</b>		<b>59.11</b>		<b>356.79</b>	<b>419.07</b>		<b>0.00</b>	<b>419.07</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.5550	5.6735	-3.1488	9.2353	-29.0799	-8.4463	3.4196	-36.8206
2	12.0000	0.1250	-1.5000	6.3360	-9.5040	-0.0020	0.5203	-0.4081
3	0.5550	12.0720	-6.7000	6.0360	-40.4410	-81.3672	0.2203	-0.3253
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>-11.35</b>		<b>-79.02</b>	<b>-89.82</b>		<b>-37.55</b>
								<b>-127.37</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.0360	in	S <sub>right</sub> = 69.43 in <sup>3</sup>	x-bar =	5.8157	in	S <sub>right</sub> = 48.33 in <sup>3</sup>
I <sub>y</sub> =	419.07	in <sup>4</sup>	S <sub>left</sub> = 69.43 in <sup>3</sup>	I <sub>y</sub> =	291.70	in <sup>4</sup>	S <sub>left</sub> = 50.16 in <sup>3</sup>
C <sub>right</sub> =	6.0360	in	A = 59.1109 in <sup>2</sup>	C <sub>right</sub> =	6.0360	in	A = 47.7622 in <sup>2</sup>
C <sub>left</sub> =	6.0360	in	r <sub>y</sub> = 2.6626 in	C <sub>left</sub> =	5.8157	in	r <sub>y</sub> = 2.4713 in

Non-composite Capacities*		
	AB	AI
<b>M</b>	#####	1614.88 k-ft
<b>V</b>	471.25 k	442.54 k

\*Compact Section

**F<sub>y</sub> = 33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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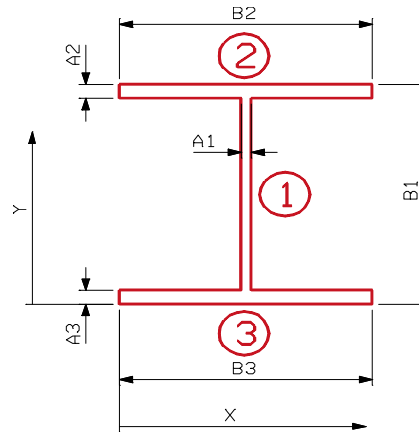
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions:**

- $A_1 = t_w = 0.6800$  in
- $B_1 = d = 36.1600$  in
- $A_2 = t_f = 1.1000$  in
- $B_2 = b_f = 12.0270$  in
- $A_3 = t_f = 1.1000$  in
- $B_3 = b_f = 12.0270$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**36WF170**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		23.0928	18.0800	417.5178	2219.3751	0.0000	0.0000	2219.3751
2	Top Flange		13.2297	35.6100	471.1096	1.3340	17.5300	4065.4987	4066.8327
3	Bottom Flange		13.2297	0.5500	7.2763	1.3340	17.5300	4065.4987	4066.8327
<b>Total</b>			<b>49.55</b>		<b>895.90</b>	<b>2222.04</b>		<b>8131.00</b>	<b>10353.04</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	18.0800	in	S <sub>top</sub> = 572.62 in <sup>3</sup>	y-bar =	18.0800	in	S <sub>top</sub> = 572.62 in <sup>3</sup>
I <sub>x</sub> =	10353.04	in <sup>4</sup>	S <sub>bottom</sub> = 572.62 in <sup>3</sup>	I <sub>x</sub> =	10353.04	in <sup>4</sup>	S <sub>bottom</sub> = 572.62 in <sup>3</sup>
C <sub>top</sub> =	18.0800	in	A = 49.5522 in <sup>2</sup>	C <sub>top</sub> =	18.0800	in	A = 49.5522 in <sup>2</sup>
C <sub>bottom</sub> =	18.0800	in	r <sub>x</sub> = 14.4545 in	C <sub>bottom</sub> =	18.0800	in	r <sub>x</sub> = 14.4545 in
J =	14.2313	in <sup>4</sup>	Z = 659.89 in <sup>3</sup>	J =	14.2313	in <sup>4</sup>	Z = <b>659.89</b> in <sup>3</sup>





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Date 4/13/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		23.0928	6.0135	138.8686	0.8898	0.0000	0.0000	0.8898
2	Top Flange		13.2297	6.0135	79.5568	159.4716	0.0000	0.0000	159.4716
3	Bottom Flange		13.2297	6.0135	79.5568	159.4716	0.0000	0.0000	159.4716
<b>Total</b>			<b>49.55</b>		<b>297.98</b>	<b>319.83</b>		<b>0.00</b>	<b>319.83</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	6.0135	in	S <sub>right</sub> =	53.19	in <sup>3</sup>	x-bar =	6.0135	in	S <sub>right</sub> =	53.19	in <sup>3</sup>
I <sub>y</sub> =	319.83	in <sup>4</sup>	S <sub>left</sub> =	53.19	in <sup>3</sup>	I <sub>y</sub> =	319.83	in <sup>4</sup>	S <sub>left</sub> =	53.19	in <sup>3</sup>
C <sub>right</sub> =	6.0135	in	A =	49.5522	in <sup>2</sup>	C <sub>right</sub> =	6.0135	in	A =	49.5522	in <sup>2</sup>
C <sub>left</sub> =	6.0135	in	r <sub>y</sub> =	2.5406	in	C <sub>left</sub> =	6.0135	in	r <sub>y</sub> =	2.5406	in

Non-composite Capacities*		
	AB	AI
M	1814.70 k-ft	1814.70 k-ft
V	442.00 k	442.00 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
------------------	-----------

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 4/13/2012

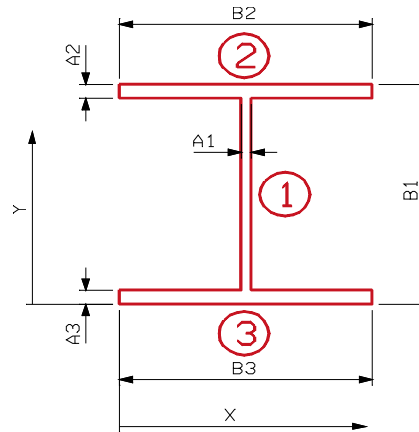
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions:**

- $A_1 = t_w = 0.7250$  in
- $B_1 = d = 36.3200$  in
- $A_2 = t_f = 1.1800$  in
- $B_2 = b_f = 12.0720$  in
- $A_3 = t_f = 1.1800$  in
- $B_3 = b_f = 12.0720$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**36WF182**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		24.6210	18.1600	447.1174	2366.2455	0.0000	0.0000	2366.2455
2	Top Flange		14.2450	35.7300	508.9724	1.6529	17.5700	4397.4890	4399.1418
3	Bottom Flange		14.2450	0.5900	8.4045	1.6529	17.5700	4397.4890	4399.1418
<b>Total</b>			<b>53.11</b>		<b>964.49</b>	<b>2369.55</b>		<b>8794.98</b>	<b>11164.53</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	18.1600 in	$S_{top} =$	614.79 in <sup>3</sup>	y-bar =	18.1600 in	$S_{top} =$	614.79 in <sup>3</sup>
$I_x =$	11164.53 in <sup>4</sup>	$S_{bottom} =$	614.79 in <sup>3</sup>	$I_x =$	11164.53 in <sup>4</sup>	$S_{bottom} =$	614.79 in <sup>3</sup>
$C_{top} =$	18.1600 in	A =	53.1109 in <sup>2</sup>	$C_{top} =$	18.1600 in	A =	53.1109 in <sup>2</sup>
$C_{bottom} =$	18.1600 in	$r_x =$	14.4987 in	$C_{bottom} =$	18.1600 in	$r_x =$	14.4987 in
J =	17.5369 in <sup>4</sup>	Z =	709.60 in <sup>3</sup>			Z =	709.60 in <sup>3</sup>



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Date 4/11/2012  
 Date 4/13/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	24.6210	6.0360	148.6124	1.0785	0.0000	0.0000	1.0785
2	Top Flange	14.2450	6.0360	85.9826	172.9969	0.0000	0.0000	172.9969
3	Bottom Flange	14.2450	6.0360	85.9826	172.9969	0.0000	0.0000	172.9969
<b>Total</b>		<b>53.11</b>		<b>320.58</b>	<b>347.07</b>		<b>0.00</b>	<b>347.07</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.0360 in	S <sub>right</sub> =	57.50 in <sup>3</sup>	x-bar =	6.0360 in	S <sub>right</sub> =	57.50 in <sup>3</sup>
I <sub>y</sub> =	347.07 in <sup>4</sup>	S <sub>left</sub> =	57.50 in <sup>3</sup>	I <sub>y</sub> =	347.07 in <sup>4</sup>	S <sub>left</sub> =	57.50 in <sup>3</sup>
C <sub>right</sub> =	6.0360 in	A =	53.1109 in <sup>2</sup>	C <sub>right</sub> =	6.0360 in	A =	53.1109 in <sup>2</sup>
C <sub>left</sub> =	6.0360 in	r <sub>y</sub> =	2.5563 in	C <sub>left</sub> =	6.0360 in	r <sub>y</sub> =	2.5563 in

Non-composite Capacities*		
	AB	AI
M	1951.40 k-ft	1951.40 k-ft
V	471.25 k	471.25 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 4/13/2012

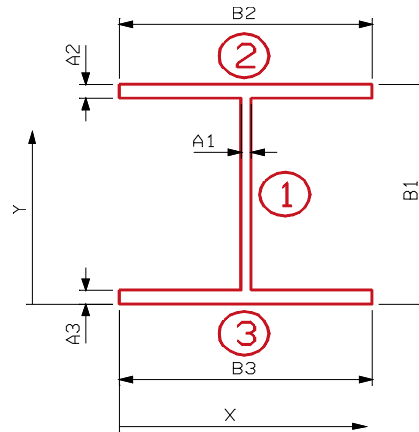
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions:**

- $A_1 = t_w = 0.7700$  in
- $B_1 = d = 36.4800$  in
- $A_2 = t_f = 1.2600$  in
- $B_2 = b_f = 12.1170$  in
- $A_3 = t_f = 1.2600$  in
- $B_3 = b_f = 12.1170$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**36WF194**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		26.1492	18.2400	476.9614	2513.1159	0.0000	0.0000	2513.1159
2	Top Flange		15.2674	35.8500	547.3370	2.0199	17.6100	4734.6117	4736.6316
3	Bottom Flange		15.2674	0.6300	9.6185	2.0199	17.6100	4734.6117	4736.6316
<b>Total</b>			<b>56.68</b>		<b>1033.92</b>	<b>2517.16</b>		<b>9469.22</b>	<b>11986.38</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	18.2400 in	$S_{top} =$	657.15 in <sup>3</sup>	y-bar =	18.2400 in	$S_{top} =$	657.15 in <sup>3</sup>
$I_x =$	11986.38 in <sup>4</sup>	$S_{bottom} =$	657.15 in <sup>3</sup>	$I_x =$	11986.38 in <sup>4</sup>	$S_{bottom} =$	657.15 in <sup>3</sup>
$C_{top} =$	18.2400 in	A =	56.6840 in <sup>2</sup>	$C_{top} =$	18.2400 in	A =	56.6840 in <sup>2</sup>
$C_{bottom} =$	18.2400 in	$r_x =$	14.5416 in	$C_{bottom} =$	18.2400 in	$r_x =$	14.5416 in
J =	21.3270 in <sup>4</sup>	Z =	759.73 in <sup>3</sup>	Z =	759.73 in <sup>3</sup>		



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web	26.1492	6.0585	158.4249	1.2920	0.0000	0.0000	1.2920
2	Top Flange	15.2674	6.0585	92.4977	186.7990	0.0000	0.0000	186.7990
3	Bottom Flange	15.2674	6.0585	92.4977	186.7990	0.0000	0.0000	186.7990
<b>Total</b>		<b>56.68</b>		<b>343.42</b>	<b>374.89</b>		<b>0.00</b>	<b>374.89</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	6.0585	in	S <sub>right</sub> = 61.88 in <sup>3</sup>	x-bar =	6.0585	in	S <sub>right</sub> = 61.88 in <sup>3</sup>
I <sub>y</sub> =	374.89	in <sup>4</sup>	S <sub>left</sub> = 61.88 in <sup>3</sup>	I <sub>y</sub> =	374.89	in <sup>4</sup>	S <sub>left</sub> = 61.88 in <sup>3</sup>
C <sub>right</sub> =	6.0585	in	A = 56.6840 in <sup>2</sup>	C <sub>right</sub> =	6.0585	in	A = 56.6840 in <sup>2</sup>
C <sub>left</sub> =	6.0585	in	r <sub>y</sub> = 2.5717 in	C <sub>left</sub> =	6.0585	in	r <sub>y</sub> = 2.5717 in

Non-composite Capacities*		
	AB	AI
M	2089.24 k-ft	2089.24 k-ft
V	500.50 k	500.50 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 4/11/2012  
Date 4/13/2012

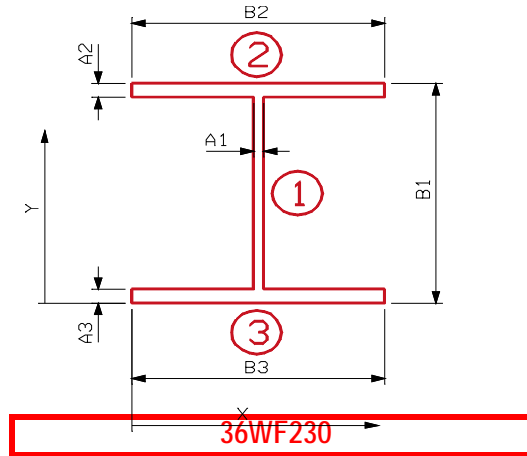
Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions:**

- $A_1 = t_w = 0.7650$  in
- $B_1 = d = 35.8800$  in
- $A_2 = t_f = 1.2600$  in
- $B_2 = b_f = 16.4750$  in
- $A_3 = t_f = 1.2600$  in
- $B_3 = b_f = 16.4750$  in
  
- $d_o = n/a$  in

$d_o$  = stiffener spacing for shear check for no stiffeners use "N/A"



**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		25.5204	17.9400	457.8360	2366.7823	0.0000	0.0000	2366.7823
2	Top Flange		20.7585	35.2500	731.7371	2.7463	17.3100	6219.9960	6222.7423
3	Bottom Flange		20.7585	0.6300	13.0779	2.7463	17.3100	6219.9960	6222.7423
<b>Total</b>			<b>67.04</b>		<b>1202.65</b>	<b>2372.28</b>		<b>12439.99</b>	<b>14812.27</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar = 17.9400 in	$S_{top} = 825.66$ in <sup>3</sup>			y-bar = 17.9400 in	$S_{top} = 825.66$ in <sup>3</sup>		
$I_x = 14812.27$ in <sup>4</sup>	$S_{bott.} = 825.66$ in <sup>3</sup>			$I_x = 14812.27$ in <sup>4</sup>	$S_{bott.} = 825.66$ in <sup>3</sup>		
$C_{top} = 17.9400$ in	$A = 67.0374$ in <sup>2</sup>			$C_{top} = 17.9400$ in	$A = 67.0374$ in <sup>2</sup>		
$C_{bottom} = 17.9400$ in	$r_x = 14.8646$ in			$C_{bottom} = 17.9400$ in	$r_x = 14.8646$ in		
$J = 26.9492$ in <sup>4</sup>	$Z = 931.50$ in <sup>3</sup>			$Z = 931.50$ in <sup>3</sup>			



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Date 4/11/2012  
Date 4/13/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web		25.5204	8.2375	210.2243	1.2446	0.0000	0.0000	1.2446
2	Top Flange		20.7585	8.2375	170.9981	469.5324	0.0000	0.0000	469.5324
3	Bottom Flange		20.7585	8.2375	170.9981	469.5324	0.0000	0.0000	469.5324
<b>Total</b>			<b>67.04</b>		<b>552.22</b>	<b>940.31</b>		<b>0.00</b>	<b>940.31</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	8.2375	in	S <sub>right</sub> =	114.15	in <sup>3</sup>	x-bar =	8.2375	in	S <sub>right</sub> =	114.15	in <sup>3</sup>
I <sub>y</sub> =	940.31	in <sup>4</sup>	S <sub>left</sub> =	114.15	in <sup>3</sup>	I <sub>y</sub> =	940.31	in <sup>4</sup>	S <sub>left</sub> =	114.15	in <sup>3</sup>
C <sub>right</sub> =	8.2375	in	A =	67.0374	in <sup>2</sup>	C <sub>right</sub> =	8.2375	in	A =	67.0374	in <sup>2</sup>
C <sub>left</sub> =	8.2375	in	r <sub>y</sub> =	3.7452	in	C <sub>left</sub> =	8.2375	in	r <sub>y</sub> =	3.7452	in

Non-composite Capacities*		
	AB	AI
M	2561.62 k-ft	2561.62 k-ft
V	488.46 k	488.46 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

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# GIRDER RATING



Lakefront Trestle - HS20 Girder Ratings



Made By: CTG Date: 4/10/2012 Job No.: P402110046  
 Checked By: DMP Date: 4/13/2012 Sheet No.: \_\_\_\_\_

Girder Rating - As Built

Girders			Girder Spreadsheet Section	CAPACITIES		SERVICE LOAD				IMPACT	RATING FACTORS - HS20				
Bents	STAAD Beam	Moment (kip-ft)		Shear (kips)	DEAD LOAD		HS 20		Moment		Shear				
					M <sub>DL</sub> (k-ft)	V <sub>DL</sub> (k)	M <sub>LL</sub> (k-ft)	V <sub>LL</sub> (k)	Inv.		Opr.	Inv.	Opr.		
SECTION A - NORTH	14-15	271	End	4694.37	603.39	849.89	68.49	722.39	54.64	1.27	1.80	3.01	3.42	5.70	
		1716	Mid	6697.01	603.39	1331.27	59.68	1181.9	54.64	1.27	1.52	2.55	3.49	5.83	
		415	Mid	6697.01	603.39	1331.32	68.52	1181.94	65.06	1.27	1.52	2.55	2.87	4.79	
		1717	End	4694.37	603.39	963.26	78.6	824.13	65.06	1.27	1.52	2.53	2.80	4.67	
	15-16	272	n/a	2559.85	487.18	306.82	4.83	361.78	16.64	1.30	2.12	3.54	10.24	17.11	
	16-17	273	End	4694.37	603.39	803.7	64.59	747.27	59.99	1.28	1.76	2.94	3.12	5.21	
		1720	Mid	5795.99	603.39	1095.64	54.51	1077.19	59.99	1.28	1.46	2.44	3.20	5.34	
		479	Mid	5795.99	603.39	1095.65	50.5	1077.19	51.06	1.28	1.46	2.44	3.79	6.33	
1722		End	4694.37	603.39	825.74	60.4	796.34	51.06	1.28	1.64	2.73	3.70	6.18		
SECTION A - SOUTH	14-15	294	End	4694.37	603.39	749.16	61.14	680.03	51.58	1.27	1.99	3.32	3.69	6.15	
		1718	Mid	6697.01	603.39	1173.31	52.37	1118.43	51.58	1.27	1.68	2.80	3.77	6.29	
		416	Mid	6697.01	603.39	1173.34	59.83	1118.47	61.48	1.27	1.68	2.80	3.10	5.18	
		1719	End	4694.37	603.39	853.08	69.91	780.31	61.48	1.27	1.67	2.78	3.02	5.05	
	15-16	295	n/a	2559.85	487.18	268.6	3.75	389.13	18.11	1.30	2.01	3.36	9.44	15.77	
	16-17	296	End	4694.37	603.39	734.81	60.14	775.89	62.81	1.27	1.75	2.92	3.03	5.07	
		1721	Mid	5795.99	603.39	1002.28	50.06	1121.34	62.81	1.27	1.45	2.43	3.11	5.19	
		480	Mid	5795.99	603.39	1002.28	43.71	1121.33	51.11	1.27	1.45	2.43	3.88	6.48	
1723		End	4694.37	603.39	769.69	53.98	840.22	51.11	1.27	1.60	2.66	3.79	6.32		
SECTION B - NORTH	17-18	274	1	2233.54	338.78	125.4	13.74	124.73	12.57	1.30	5.88	9.83	9.05	15.11	
		1724	2	2327.59	350.26	225.52	15.28	211.48	12.57	1.3	3.41	5.69	9.32	15.56	
		1725	3	2684.18	392.75	339.38	16.93	300.38	12.57	1.3	2.65	4.42	10.46	17.46	
		1726	4	3095.15	439.84	412.53	17.94	353.13	12.57	1.3	2.57	4.29	11.75	19.62	
	18-19	275	1	2973.15	426.06	583.53	71	533.16	63.13	1.27	1.51	2.52	1.92	3.20	
		1730	2	6232.06	419.17	1327.98	67.09	1266.05	63.13	1.27	1.29	2.16	1.91	3.19	
		1387	2	6232.06	419.17	1328.2	69.28	1265.99	68.19	1.27	1.29	2.16	1.75	2.92	
		1732	3	6909.10	460.51	1095.89	73.12	1034.85	68.19	1.27	1.92	3.21	1.94	3.25	
		1734	4	3651.07	500.70	487.8	74.85	452.49	68.19	1.27	2.42	4.04	2.15	3.58	
	1736	5	4089.05	546.64	759.2	77.43	677.4	68.19	1.27	1.66	2.77	2.37	3.96		
	19-20	276	1	3835.28	520.23	573.86	24.6	522.53	19.3	1.30	2.10	3.50	8.97	14.98	
		1738	2	3322.54	465.10	453.84	23.31	425.84	19.3	1.3	2.27	3.80	7.99	13.34	
		1739	3	3857.14	522.52	118.98	19.44	123.42	19.3	1.3	10.63	17.76	9.13	15.25	
	SECTION B - SOUTH	17-18	297	1	2205.51	335.33	111.34	12.33	134.79	13.6	1.30	5.42	9.05	8.32	13.90
			1727	2	2346.52	352.56	209.68	14	236.38	13.6	1.3	3.11	5.19	8.72	14.55
			1728	3	2713.69	396.20	318.59	15.71	336.07	13.6	1.3	2.43	4.05	9.79	16.36
1729			4	3074.72	437.54	386.79	16.73	393.26	13.6	1.3	2.32	3.87	10.84	18.10	
18-19		298	1	2973.15	426.06	540.98	66.39	584.8	69.85	1.27	1.41	2.35	1.76	2.95	
		1731	2	6232.06	419.17	1239.16	62.48	1405.95	69.85	1.27	1.19	1.99	1.76	2.93	
		1408	2	6232.06	419.17	1239.17	63.61	1405.96	74.73	1.27	1.19	1.99	1.63	2.73	
		1733	3	6909.10	460.51	1026.06	67.45	1152.64	74.73	1.27	1.76	2.93	1.81	3.02	
		1735	4	3651.07	500.70	466.37	69.18	514.42	74.73	1.27	2.15	3.59	1.99	3.33	
1737		5	4089.05	546.64	686.65	71.76	725.02	74.73	1.27	1.60	2.67	2.20	3.68		
19-20		299	1	3879.04	524.82	520.33	21.16	556.72	18.6	1.30	2.04	3.41	9.48	15.83	
		1740	2	3343.45	467.40	419.26	19.88	465.08	18.6	1.3	2.13	3.56	8.42	14.05	
	1741	3	4033.44	540.90	91.35	15.25	117.82	18.6	1.3	11.78	19.67	9.93	16.58		

Lakefront Trestle - HS20 Girder Ratings



Made By: CTG Date: 4/10/2012 Job No.: P402110046  
 Checked By: DMP Date: 4/13/2012 Sheet No.: \_\_\_\_\_

Girder Rating - As Built

Girders	Girder Spreadsheet	CAPACITIES		SERVICE LOAD					IMPACT	RATING FACTORS - HS20					
				DEAD LOAD		HS 20				Moment		Shear			
SECTION C - NORTH	20-21	277	1	6686.03	560.42	439.38	82.96	510.62	83.81	1.26	4.38	7.31	1.97	3.30	
		1742	2	6136.19	521.37	773.12	80.91	758.73	83.81	1.26	2.47	4.13	1.82	3.03	
		1743	3	6693.95	477.73	1352.08	77.18	1401.2	83.81	1.26	1.29	2.15	1.65	2.75	
		1389	3	6693.95	477.73	1351.97	26.72	1401.06	34.79	1.26	1.29	2.15	4.66	7.78	
		1744	4	5503.98	475.44	1062.46	31.15	1203.27	34.79	1.26	1.25	2.09	4.57	7.64	
		1388	4	5503.98	475.44	715.48	125.37	1203.19	92.71	1.26	1.39	2.32	1.23	2.06	
		1745	5	6136.19	521.37	968.86	128.78	805.18	92.71	1.26	2.22	3.70	1.40	2.33	
		1746	6	6751.47	565.01	1612.41	130.71	757.56	92.71	1.26	2.25	3.75	1.56	2.60	
	1747	7	7330.82	605.21	2363.94	132.96	1035.82	92.71	1.26	1.50	2.51	1.71	2.85		
	21-22	278	1	6527.93	605.21	2316.76	118.96	1160.72	85.64	1.25	1.12	1.87	1.94	3.24	
		1754	2	6009.84	566.16	1646.12	116.88	678.3	85.64	1.25	2.10	3.51	1.78	2.98	
		1755	3	5006.36	530.56	955.8	114.76	575.7	85.64	1.25	2.41	4.03	1.64	2.74	
		1756	4	4489.63	485.77	640.32	112.74	1051.52	85.64	1.25	1.28	2.14	1.46	2.44	
		1391	4	4489.63	485.77	774.55	19.36	1051.44	29.11	1.25	1.22	2.04	5.83	9.74	
		1757	5	5234.00	476.59	1029.61	17.08	1134.75	29.11	1.25	1.27	2.11	5.75	9.61	
		1390	5	5234.00	476.59	1029.81	94.49	1134.68	82.56	1.25	1.27	2.11	1.58	2.64	
		1758	6	4832.44	515.63	511.76	96.47	677.32	82.56	1.25	2.27	3.79	1.74	2.91	
	1759	7	5345.51	559.27	920.54	99.23	575.89	82.56	1.25	2.66	4.44	1.92	3.21		
	1760	8	5929.23	607.50	1488.64	101.12	1033.78	82.56	1.25	1.42	2.38	2.13	3.55		
	22-23	279	1	5386.63	591.43	1355.71	79.71	783.89	63.29	1.29	1.65	2.76	2.75	4.60	
		1767	2	4784.97	538.60	949.34	78.09	698.79	63.29	1.29	1.82	3.03	2.47	4.12	
		1768	3	4204.26	485.77	586.49	76.66	981.21	63.29	1.29	1.25	2.09	2.18	3.64	
		1392	3	4204.26	485.77	469.71	22.33	981.32	48.15	1.29	1.31	2.18	3.39	5.66	
		1769	4	4733.64	534.01	232.12	23.7	427.18	48.15	1.29	3.71	6.19	3.73	6.23	
	1770	5	5346.75	587.98	128.57	25.85	210.53	48.15	1.29	8.79	14.68	4.11	6.87		
	SECTION C - SOUTH	20-21	300	1	5825.45	545.49	525.56	88.23	515.47	85.43	1.25	3.68	6.14	1.86	3.10
			1748	2	5310.32	505.30	1229	84.82	1256.41	85.43	1.25	1.09	1.82	1.70	2.85
			1749	3	6873.69	470.84	1622.84	81.01	1677.48	85.43	1.25	1.05	1.75	1.58	2.63
1410			3	6873.69	470.84	1622.74	17.51	1677.36	45.87	1.25	1.05	1.75	3.60	6.01	
1750			4	7006.01	478.88	1446.64	22.95	1416.01	45.87	1.25	1.33	2.23	3.61	6.03	
1409			4	7006.01	478.88	1200.92	109.29	1415.74	113.13	1.25	1.42	2.37	1.10	1.83	
1751			5	5573.72	525.97	652.16	112.18	841.76	113.13	1.25	2.07	3.46	1.24	2.07	
1752			6	6110.17	567.31	820.59	113.93	713.74	113.13	1.25	2.61	4.35	1.37	2.28	
1753		7	6613.18	605.21	1479.45	116.02	1320.25	113.13	1.25	1.31	2.19	1.48	2.47		
21-22		395	1	5746.69	588.50	1273.52	50.22	1110.46	61.63	1.28	1.33	2.22	3.06	5.10	
		1761	2	5154.82	543.19	951.15	48.05	940.4	61.63	1.28	1.50	2.51	2.81	4.69	
		1762	3	6150.56	500.70	714.93	46.45	810.81	61.63	1.28	2.32	3.87	2.57	4.30	
		1763	3	6150.56	500.70	392.01	43.65	1152.87	61.63	1.28	1.76	2.94	2.59	4.33	
		1427	4	5741.52	471.99	438.41	42.11	1152.92	65.03	1.28	1.61	2.70	2.31	3.86	
		1764	5	6150.56	500.70	749.94	44.9	787.06	65.03	1.28	2.37	3.95	2.45	4.09	
		1765	6	5168.38	544.34	985.42	46.56	908.21	65.03	1.28	1.54	2.57	2.68	4.47	
		1766	7	5760.67	593.72	1220.57	48.2	1024.98	65.03	1.28	1.47	2.45	2.94	4.91	
22-23		396	1	6597.77	559.39	1562.57	115.44	1371.88	106.3	1.25	1.23	2.05	1.42	2.37	
		1771	2	5959.87	555.83	904.84	113.35	772.36	106.3	1.25	2.28	3.81	1.42	2.37	
		1772	3	5368.57	509.89	908.57	110.36	1006.28	106.3	1.25	1.53	2.56	1.27	2.12	
		1773	4	6930.34	474.29	1317.77	107.6	1405.11	106.3	1.25	1.37	2.29	1.16	1.94	
		1429	4	6930.34	474.29	1496.17	17.4	1405.02	41.81	1.25	1.31	2.18	3.98	6.65	
		1774	5	7043.90	481.18	1606.18	11.95	1636.01	41.81	1.25	1.12	1.87	4.11	6.86	
		1428	5	7043.90	481.18	1606.38	85.45	1636.19	85.66	1.25	1.12	1.86	1.59	2.66	
		1775	6	5677.03	534.01	947.03	88.29	961.23	85.66	1.25	1.71	2.85	1.80	3.01	
		1776	7	6170.56	571.90	241.23	89.78	267.84	85.66	1.25	8.06	13.46	1.96	3.27	
1930		8	6613.18	605.21	628.52	91.78	562.29	85.66	1.25	3.80	6.35	2.09	3.49		

Lakefront Trestle - HS20 Girder Ratings



Made By: CTG Date: 4/10/2012 Job No.: P402110046  
 Checked By: DMP Date: 4/13/2012 Sheet No.: \_\_\_\_\_

Girder Rating - As Built

Girders		Girder Spreadsheet	CAPACITIES		SERVICE LOAD				IMPACT	RATING FACTORS - HS20					
					DEAD LOAD		HS 20			Moment		Shear			
SECTION D - NORTH	23-24	280	1	4044.23	586.83	132.62	26.57	136.44	26.68	1.30	10.06	16.80	7.34	12.25	
		1777	2	3618.93	539.75	429.74	29.14	421.01	26.68	1.3	2.58	4.30	6.67	11.14	
		1778	3	4002.01	582.24	613.97	30.67	585.34	26.68	1.3	1.94	3.24	7.21	12.03	
	24-25	281	1	4542.86	592.57	669.99	67.79	649.84	63.89	1.28	2.03	3.40	2.84	4.75	
		1780	2	4055.65	543.19	254.78	66.09	253.53	63.89	1.28	5.29	8.83	2.58	4.30	
		1781	3	3640.33	499.55	592.93	64.82	587.69	63.89	1.28	1.76	2.94	2.34	3.91	
		1782	4	5915.47	470.84	1052.6	62.7	1067.23	63.89	1.28	1.53	2.56	2.19	3.66	
		1393	4	5915.47	470.84	1052.61	66.5	1067.2	67.07	1.28	1.53	2.56	2.06	3.45	
		1783	5	3640.33	499.55	564.78	68.45	564.18	67.07	1.28	1.85	3.10	2.20	3.68	
		1784	6	4055.65	543.19	286.39	69.72	276.32	67.07	1.28	4.80	8.01	2.43	4.06	
	25-26	282	1	3238.68	383.03	699.34	54.97	678.02	51.93	1.30	1.22	2.03	2.13	3.55	
		1792	2	2202.42	427.33	235.3	53.09	232.01	51.93	1.3	2.90	4.84	2.45	4.08	
	SECTION D - SOUTH	23-24	301	1	2244.34	413.62	167.73	40.96	186.45	45.09	1.30	3.85	6.43	2.83	4.73
			1779	2	3262.62	325.45	658.3	43.51	710.22	45.09	1.3	1.20	2.01	2.11	3.53
24-25		302	1	4542.86	592.57	708.01	61.4	767.32	64.31	1.28	1.70	2.84	2.87	4.79	
		1786	2	4055.65	543.19	332.7	59.71	369.53	64.31	1.28	3.53	5.89	2.61	4.35	
		1787	3	3565.38	491.52	570.99	58.44	638.73	64.31	1.28	1.59	2.66	2.33	3.88	
		1788	4	4184.44	468.55	846.39	55.7	960.97	64.31	1.28	1.16	1.93	2.22	3.70	
		1411	4	4184.44	468.55	846.35	52.42	960.87	60.55	1.28	1.16	1.93	2.38	3.98	
		1789	5	3565.38	491.52	588.43	55.16	658.72	60.55	1.28	1.53	2.56	2.50	4.17	
		1790	6	4055.65	543.19	263.91	56.43	289.83	60.55	1.28	4.61	7.70	2.79	4.67	
1791		7	4554.41	572.07	620.12	58.13	666.37	60.55	1.28	2.03	3.38	2.95	4.93		
25-26		303	1	3278.60	319.42	537.85	24.79	587.22	24.22	1.30	1.56	2.60	4.20	7.02	
		1793	2	2986.18	390.38	386.25	23.41	434.9	24.22	1.3	2.02	3.38	5.27	8.80	
		1794	3	2202.42	424.93	100.85	20.64	121.1	24.22	1.3	6.06	10.13	5.83	9.73	
SECTION E - NORTH		26-27	283	1	6520.92	598.32	296.16	67.61	241.36	53.22	1.27	9.22	15.41	3.48	5.81
	1795		2	5944.89	554.68	400.8	65.39	323.32	53.22	1.27	6.09	10.17	3.20	5.35	
	1796		3	5383.16	511.04	920.45	63.8	766.86	53.22	1.27	1.98	3.31	2.92	4.87	
	1797		4	7062.86	482.33	1188.18	60.92	1004.69	53.22	1.27	1.99	3.33	2.75	4.59	
	1798		5	7728.59	469.70	1616.11	58.91	1403.84	53.22	1.27	1.45	2.43	2.68	4.48	
	1394		5	7728.59	469.70	1615.96	73.11	1403.73	70.31	1.27	1.45	2.43	1.93	3.23	
	1799		6	7024.95	480.03	1081.5	75.14	876.36	70.31	1.27	2.33	3.89	1.97	3.30	
	1800		7	5368.57	509.89	745.74	78.19	557.85	70.31	1.27	2.86	4.78	2.11	3.52	
	1801		8	5944.89	554.68	324.36	79.95	412.65	70.31	1.27	4.86	8.11	2.33	3.88	
	1802	9	6520.92	598.32	824.24	82.19	846.22	70.31	1.27	2.34	3.90	2.54	4.24		
	27-28	284	1	5161.84	571.90	634.42	5.16	717.8	27.95	1.30	2.14	3.58	7.17	11.97	
		1809	2	4429.00	506.44	608.35	3.23	544.12	27.95	1.3	2.37	3.96	6.37	10.64	
		1811	3	4105.40	476.59	597.81	2.04	432.31	27.95	1.3	2.73	4.56	6.01	10.04	
		1813	4	4429.00	506.44	601.69	2.55	513.99	27.95	1.3	2.52	4.20	6.38	10.66	
		1815	5	5148.70	570.75	623.13	4.45	673.62	27.95	1.3	2.28	3.81	7.17	11.97	
	28-29	285	1	6520.92	598.32	810.34	81.06	809.77	67.33	1.27	2.45	4.09	2.66	4.44	
		1817	2	5944.89	554.68	312.4	78.8	390.32	67.33	1.27	5.15	8.60	2.44	4.07	
		1818	3	5368.57	509.89	744.1	77.03	541.09	67.33	1.27	2.95	4.93	2.21	3.69	
		1819	4	7024.95	480.03	1068.16	73.98	840.06	67.33	1.27	2.43	4.07	2.07	3.45	
		1820	5	7728.59	469.70	1593.9	71.98	1344.76	67.33	1.27	1.53	2.55	2.03	3.39	
1395		5	7728.59	469.70	1594.08	57.77	1344.85	50.6	1.27	1.53	2.55	2.83	4.73		
1821		6	7062.86	482.33	1174.69	59.81	965.3	50.6	1.27	2.08	3.48	2.90	4.85		
1822		7	5383.16	511.04	906.64	62.69	734.58	50.6	1.27	2.08	3.47	3.08	5.14		
1823		8	5944.89	554.68	396.25	64.29	312.91	50.6	1.27	6.30	10.52	3.38	5.64		
1824	9	6520.92	598.32	274.33	66.42	212.82	50.6	1.27	10.51	17.55	3.67	6.13			

Lakefront Trestle - HS20 Girder Ratings



Made By: CTG Date: 4/10/2012 Job No.: P402110046  
 Checked By: DMP Date: 4/13/2012 Sheet No.: \_\_\_\_\_

Girder Rating - As Built

Girders	Girder Spreadsheet	CAPACITIES		SERVICE LOAD						RATING FACTORS - HS20				
				DEAD LOAD		HS 20		IMPACT	Moment		Shear			
SECTION E - SOUTH	26-27	304	1	6536.27	599.46	273.65	59.1	267.96	53.81	1.26	8.44	14.09	3.55	5.93
		1803	2	5959.87	555.83	370.34	56.82	339.34	53.81	1.26	5.90	9.86	3.28	5.47
		1804	3	5383.16	511.04	894.93	55.04	868.48	53.81	1.26	1.78	2.97	2.99	4.99
		1805	4	6930.34	474.29	1481.01	51.65	1512.46	53.81	1.26	1.21	2.02	2.77	4.62
		1412	4	6930.34	474.29	1481.02	70.83	1512.49	78.26	1.26	1.21	2.02	1.79	2.98
		1806	5	5368.57	509.89	663.26	73.88	573.34	78.26	1.26	2.87	4.80	1.93	3.23
		1807	6	5944.89	554.68	347.32	75.64	506.84	78.26	1.26	3.96	6.62	2.13	3.56
	1808	7	6520.92	598.32	823.18	77.89	991.98	78.26	1.26	2.01	3.36	2.32	3.88	
	27-28	305	1	5161.84	571.90	629.19	4.08	838.13	32.71	1.30	1.84	3.07	6.14	10.25
		1810	2	4429.00	506.44	609.82	2.15	636.45	32.71	1.3	2.03	3.38	5.46	9.12
		1812	3	4105.40	476.59	612.25	2.44	516.15	32.71	1.3	2.27	3.80	5.13	8.57
		1814	4	4429.00	506.44	624.4	3.63	646.69	32.71	1.3	1.98	3.31	5.44	9.08
	28-29	1816	5	5148.70	570.75	652.45	5.53	846.36	32.71	1.3	1.80	3.01	6.11	10.20
		306	1	6520.92	598.32	838.93	78.95	1005.37	79.32	1.26	1.98	3.30	2.29	3.82
		1825	2	5944.89	554.68	354.13	76.69	511.42	79.32	1.26	3.92	6.55	2.10	3.50
		1826	3	5368.57	509.89	673.16	74.92	585.96	79.32	1.26	2.80	4.68	1.90	3.18
		1827	4	6930.34	474.29	1499.19	71.87	1532.8	79.32	1.26	1.19	1.98	1.76	2.93
		1413	4	6930.34	474.29	1499.26	52.21	1532.82	54.21	1.26	1.19	1.98	2.74	4.58
1828		5	5368.57	509.89	904.98	55.6	882.34	54.21	1.26	1.74	2.90	2.95	4.93	
1829	6	5944.89	554.68	374.9	57.37	349.3	54.21	1.26	5.71	9.54	3.24	5.41		
1830	7	6520.92	598.32	281.26	59.69	267.82	54.21	1.26	8.41	14.04	3.51	5.87		
SECTION F - NORTH	29-30	286	1	5161.84	571.90	148.17	25.18	126.55	20.69	1.30	13.92	23.25	9.24	15.43
		1831	2	4429.00	506.44	264.51	26.52	219.68	20.69	1.3	6.59	11.01	8.09	13.50
		1832	3	4068.50	473.14	593.72	29.91	461.12	20.69	1.3	2.53	4.23	7.44	12.43
		1833	4	4441.58	507.59	729.79	31.24	553.21	20.69	1.3	2.24	3.74	8.00	13.36
		1834	5	5174.98	573.05	935.53	33.23	685.3	20.69	1.3	2.05	3.42	9.08	15.16
	30-31	287	1	5493.40	600.61	1063.78	91.7	798.4	66.78	1.26	1.88	3.14	2.64	4.40
		1839	2	4888.10	547.79	504.31	89.75	386.56	66.78	1.26	4.00	6.69	2.36	3.94
		1841	3	4366.25	500.70	957.73	87.17	733.15	66.78	1.26	1.56	2.60	2.12	3.54
		1843	4	5293.91	481.18	1097.96	84.7	844.11	66.78	1.26	1.68	2.80	2.03	3.39
		1845	5	8936.33	470.84	1890.67	84.11	1494.48	66.78	1.26	1.59	2.65	1.98	3.31
		1396	5	8936.33	470.84	1890.71	84.49	1494.19	66.6	1.26	1.59	2.65	1.98	3.31
		1847	6	5293.91	481.18	1092.63	85.14	844.18	66.6	1.26	1.68	2.80	2.03	3.40
		1849	7	4366.25	500.70	936.68	87.61	721.72	66.6	1.26	1.60	2.66	2.12	3.55
		1851	8	4901.04	548.94	516.72	90.14	383.07	66.6	1.26	4.04	6.74	2.37	3.96
	1853	9	5506.79	601.76	1076.8	92.09	792.48	66.6	1.26	1.90	3.17	2.65	4.42	
	31-32	288	1	5201.30	575.35	911.91	31.86	677.14	19.85	1.30	2.10	3.51	9.54	15.92
		1855	2	4466.77	509.89	721.35	29.94	554.75	19.85	1.3	2.26	3.77	8.41	14.05
		1856	3	4093.09	475.44	585.64	28.55	462.66	19.85	1.3	2.55	4.26	7.83	13.07
1857		4	4656.95	527.12	247.33	24.86	211.3	19.85	1.3	7.27	12.15	8.84	14.76	
1858		5	5641.25	613.25	130.53	23.4	115.25	19.85	1.3	16.83	28.11	10.41	17.38	

Lakefront Trestle - HS20 Girder Ratings



Made By: CTG Date: 4/10/2012 Job No.: P402110046  
 Checked By: DMP Date: 4/13/2012 Sheet No.: \_\_\_\_\_

Girder Rating - As Built

Girders	Girder Spreadsheet	CAPACITIES		SERVICE LOAD					IMPACT	RATING FACTORS - HS20				
				DEAD LOAD		HS 20				Moment		Shear		
SECTION F - SOUTH	29-30	307	1	5188.13	574.20	126.56	20.23	139.08	21.1	1.30	12.80	21.38	9.20	15.37
		1835	2	4441.58	507.59	231.44	21.72	244.6	21.1	1.3	6.00	10.02	8.05	13.45
		1836	3	3921.76	459.36	529.66	25.37	511.92	21.1	1.3	2.24	3.74	7.16	11.96
		1837	4	4466.77	509.89	663.89	26.9	620.32	21.1	1.3	2.06	3.44	7.98	13.32
		1838	5	5214.47	576.50	835.5	28.82	750.31	21.1	1.3	1.95	3.26	9.06	15.12
	30-31	308	1	5493.40	600.61	975.18	85.61	892.95	76.26	1.26	1.73	2.89	2.35	3.92
		1840	2	4888.10	547.79	453.24	83.65	422.65	76.26	1.26	3.72	6.21	2.11	3.52
		1842	3	4366.25	500.70	906.57	81.07	855.83	76.26	1.26	1.36	2.27	1.90	3.17
		1844	4	5293.91	481.18	1036.68	78.6	982.53	76.26	1.26	1.47	2.45	1.82	3.04
		1846	5	8936.33	470.84	1770.08	78.01	1725.19	76.26	1.26	1.41	2.35	1.77	2.96
		1414	5	8936.33	470.84	1770.07	79.09	1724.96	76.96	1.26	1.41	2.35	1.75	2.92
		1848	6	5293.91	481.18	1024.67	79.74	973.83	76.96	1.26	1.49	2.48	1.79	3.00
		1850	7	4366.25	500.70	878.63	82.21	832.3	76.96	1.26	1.42	2.37	1.87	3.13
		1852	8	4901.04	548.94	485.23	84.74	444.35	76.96	1.26	3.51	5.87	2.09	3.48
	1854	9	5506.79	601.76	1012.14	86.69	917.45	76.96	1.26	1.67	2.79	2.32	3.88	
	31-32	309	1	5214.47	576.50	863.98	30.22	779.68	22.57	1.30	1.86	3.11	8.44	14.09
		1859	2	4479.38	511.04	683.58	28.29	640.5	22.57	1.3	1.99	3.32	7.45	12.44
		1860	3	4130.06	478.88	549.19	26.84	530.46	22.57	1.3	2.28	3.81	6.97	11.65
		1861	4	4644.20	525.97	232.69	23.14	244.58	22.57	1.3	6.29	10.51	7.79	13.01
		1862	5	5654.75	614.39	126.19	21.71	137.37	22.57	1.3	14.17	23.66	9.21	15.37
SECTION G - NORTH	32-33	289	1	6028.50	647.53	588.92	107.97	441.45	80.31	1.24	4.43	7.40	2.35	3.92
		1863	2	6094.81	592.57	1359.13	104.11	1053.41	80.31	1.24	1.53	2.55	2.12	3.53
		1864	3	7824.06	568.46	1642.63	101.4	1279.3	80.31	1.24	1.65	2.76	2.02	3.37
		1865	4	10777.45	543.19	2439.94	100.18	1934.13	80.31	1.24	1.46	2.44	1.91	3.19
		1398	4	10777.45	543.19	2439.82	33.77	1934.06	49.38	1.24	1.46	2.44	3.76	6.28
		1866	5	10357.76	523.67	2285.11	40.52	1743.78	49.38	1.24	1.57	2.63	3.54	5.92
		1867	6	7331.16	537.45	1854.56	46.28	1322.31	49.38	1.24	1.38	2.31	3.59	6.00
		1397	6	7331.16	537.45	1272.01	157.51	1265.16	108.1	1.24	1.67	2.79	1.14	1.91
		1868	7	5847.41	573.05	918.67	159.78	1022.17	108.1	1.24	1.69	2.83	1.26	2.10
	1869	8	6285.93	607.50	1222.17	162.14	543.29	108.1	1.24	3.21	5.37	1.36	2.28	
	1870	9	7559.36	645.03	2619.58	165.47	1387.92	108.1	1.24	1.11	1.86	1.48	2.47	
	33-34	290	1	7464.66	635.59	2404.65	123.71	1178.71	68.32	1.29	1.31	2.20	2.48	4.15
		1877	2	6886.06	605.21	1675.65	121.4	982.44	68.32	1.29	1.71	2.86	2.34	3.91
		1878	3	5775.19	567.31	1328.23	120.31	887.58	68.32	1.29	1.63	2.72	2.15	3.59
1879		4	5347.06	532.86	538.72	118.04	1048.98	68.32	1.29	1.58	2.64	1.98	3.31	
1399		4	5347.06	532.86	478.55	19.53	1048.77	46.71	1.29	1.61	2.69	3.88	6.48	
1880		5	5905.36	577.65	317.35	22.79	631.18	46.71	1.29	3.11	5.19	4.19	7.00	
1881	6	6028.50	644.90	116.38	24.84	187.45	46.71	1.29	11.20	18.70	4.69	7.82		

Lakefront Trestle - HS20 Girder Ratings



Made By: CTG Date: 4/10/2012 Job No.: P402110046  
 Checked By: DMP Date: 4/13/2012 Sheet No.: \_\_\_\_\_

Girder Rating - As Built

Girders	Girder Spreadsheet	CAPACITIES		SERVICE LOAD				IMPACT	RATING FACTORS - HS20					
				DEAD LOAD		HS 20			Moment		Shear			
SECTION G - SOUTH	32-33	1416	1	5745.07	612.76	115.86	29.56	154.21	46.08	1.27	13.16	21.98	4.52	7.55
		1871	2	5929.23	607.50	248.66	27.4	384.57	46.08	1.27	5.29	8.83	4.50	7.52
		1872	3	5359.21	560.42	489.78	25.73	845.45	46.08	1.27	2.03	3.38	4.15	6.93
		1873	4	4992.92	529.41	673.64	22.49	1246.96	46.08	1.27	1.20	2.00	3.94	6.58
		1415	4	4992.92	529.41	673.72	74.51	1246.98	66.62	1.27	1.20	2.00	2.36	3.93
		1874	5	5359.21	560.42	742.02	77.75	650.46	66.62	1.27	2.45	4.09	2.50	4.18
		1875	6	5929.23	607.50	1125.82	79.38	699.25	66.62	1.27	2.32	3.87	2.75	4.59
	1876	7	5745.07	632.30	1604.68	81.43	767.15	66.62	1.27	1.73	2.89	2.87	4.79	
	33-34	311	1	6486.10	642.63	1670.75	106.9	896.67	89.55	1.25	1.77	2.96	2.07	3.46
		1882	2	7289.94	615.54	1052.38	104.51	619.56	89.55	1.25	3.52	5.88	1.97	3.30
		1883	3	7787.30	566.16	793.98	101.59	1268.48	89.55	1.25	1.96	3.28	1.79	2.98
		1418	4	7186.50	528.26	1381.84	34.74	1443.42	40.38	1.25	1.38	2.30	4.41	7.37
		1884	5	8393.98	542.04	1508.27	26.54	1606.53	40.38	1.25	1.48	2.47	4.63	7.74
		1417	5	8393.98	542.04	1508.37	69.5	1606.02	76.66	1.25	1.48	2.47	2.17	3.63
		1885	6	7879.28	571.90	1182.33	72.18	1240.41	76.66	1.25	1.88	3.15	2.30	3.84
	1886	7	6174.38	613.25	745.64	74.73	768.01	76.66	1.25	2.50	4.17	2.48	4.14	
	1887	8	5867.25	653.13	240.53	76.78	250.03	76.66	1.25	8.19	13.68	2.66	4.44	
SECTION H - NORTH	34-35	291	1	7103.62	801.01	285.71	27.02	737.32	63.94	1.27	3.31	5.53	4.35	7.26
		1888	2	6424.30	740.72	495.71	22.53	1388.69	63.94	1.27	1.51	2.52	4.04	6.74
		1401	2	6424.30	740.72	857.78	68.47	1388.71	41.61	1.27	1.39	2.32	5.68	9.49
		1400	3	6761.23	770.86	1868	183.46	1151.03	99.12	1.27	1.37	2.28	1.95	3.25
		1889	4	9448.78	805.32	2702.42	185.64	1320.98	99.12	1.27	1.63	2.72	2.06	3.45
	1890	5	12954.14	872.78	4762.6	192.09	1730.98	99.12	1.27	1.42	2.37	2.28	3.81	
	35-36	292	1	13024.07	911.54	5078.99	257.6	2035.46	133.16	1.20	1.21	2.02	1.66	2.78
		1896	2	11645.15	879.96	3501.71	253.91	1357.89	133.16	1.2	2.01	3.35	1.59	2.65
		1897	3	10171.45	855.56	2254.66	251.22	891.72	133.16	1.2	3.12	5.21	1.53	2.55
		1898	4	7202.44	809.62	1207.12	249.15	924.56	133.16	1.2	2.34	3.91	1.40	2.34
		1406	4	7202.44	809.62	1366.74	137.85	1264.2	98.16	1.2	1.65	2.75	2.47	4.12
		1899	5	8941.87	769.43	2030.29	133.89	1659.96	98.16	1.2	1.46	2.43	2.33	3.89
		1900	6	10553.47	753.64	2678.31	131.51	2109.57	98.16	1.2	1.29	2.15	2.28	3.81
		1405	6	10553.47	753.64	2755.77	60.03	2109.79	66.57	1.2	1.27	2.12	3.90	6.51
		1901	7	12101.89	736.41	3391.02	59.31	2246.65	66.57	1.2	1.32	2.20	3.80	6.35
		1902	8	13384.98	726.36	3799.41	52.18	2574.99	66.57	1.2	1.26	2.10	3.80	6.34
		1404	8	13384.98	726.36	3799.36	50.65	2575	67.14	1.2	1.26	2.10	3.78	6.31
		1903	9	12420.03	753.64	3371.77	57.65	2174.44	67.14	1.2	1.42	2.37	3.88	6.48
		1403	9	12420.03	753.64	2769.5	140.25	2041.59	99.51	1.2	1.66	2.77	2.20	3.68
		1904	10	10951.11	778.04	1549.24	141.89	1237.86	99.51	1.2	2.77	4.63	2.29	3.83
		1905	11	9123.47	782.35	1131.31	143.32	1016.35	99.51	1.2	2.89	4.83	2.30	3.84
	1906	12	7268.57	815.36	707.69	145.4	876.16	99.51	1.2	2.78	4.65	2.42	4.04	
	1402	12	7268.57	815.36	1585.78	216.16	898.03	124.49	1.2	2.23	3.72	1.65	2.75	
	1907	13	10129.75	852.69	2365.51	217.93	1208.14	124.49	1.2	2.24	3.74	1.76	2.93	
	1908	14	13029.12	877.09	3486.88	220.96	1708.2	124.49	1.2	1.91	3.19	1.82	3.04	
	1909	15	16291.51	910.11	4636.1	224.53	2255.87	124.49	1.2	1.75	2.92	1.91	3.18	
	36-37	293	1	12954.14	872.78	4265.18	162.99	2013.78	64.96	1.30	1.30	2.18	3.61	6.02
		1924	2	9346.78	798.14	2701.46	157.21	1511.63	64.96	1.3	1.37	2.29	3.24	5.41
		1925	3	6376.61	736.41	1567.29	153.7	1136.53	64.96	1.3	1.35	2.26	2.93	4.89
		1407	3	6376.61	736.41	969.33	48.7	970.6	44.67	1.3	1.87	3.12	5.34	8.92

Lakefront Trestle - HS20 Girder Ratings



Made By: CTG Date: 4/10/2012 Job No.: P402110046  
 Checked By: DMP Date: 4/13/2012 Sheet No.: \_\_\_\_\_

Girder Rating - As Built

SECTION H - SOUTH	Girders	Girder Spreadsheet	CAPACITIES		SERVICE LOAD				IMPACT	RATING FACTORS - HS20			
					DEAD LOAD		HS 20			Moment		Shear	
34-35	312	1	7103.62	801.01	231.94	38.51	272.12	43.76	1.30	8.86	14.80	6.08	10.16
	1891	2	6712.76	766.56	436.02	40.48	498.24	43.76	1.3	4.37	7.30	5.78	9.66
	1892	3	6344.89	733.54	874.34	44.36	950.4	43.76	1.3	1.94	3.24	5.47	9.14
	1419	3	6344.89	733.54	1424.04	138.14	1105.08	65.85	1.3	1.44	2.41	2.98	4.98
	1893	4	8982.14	772.30	2579.89	142.07	1510.41	65.85	1.3	1.32	2.21	3.16	5.28
	1894	5	12161.35	826.85	3080.68	144.11	1682.36	65.85	1.3	1.72	2.87	3.44	5.75
35-36	1895	6	13104.20	881.40	3841.82	147.2	1939.1	65.85	1.3	1.48	2.48	3.71	6.20
	313	1	16408.63	915.85	4242.91	202.17	2218.66	124.28	1.20	1.89	3.15	2.02	3.37
	1910	2	13154.32	884.27	2794.48	197.13	1494.13	124.28	1.2	2.45	4.09	1.94	3.24
	1911	3	10150.59	854.12	1598.14	193.5	948.68	124.28	1.2	3.27	5.46	1.86	3.11
	1912	4	7268.57	815.36	732.41	191.28	654.33	124.28	1.2	3.71	6.19	1.75	2.92
	1424	4	7268.57	815.36	1367.97	129.88	1187.96	98.71	1.2	1.77	2.96	2.52	4.20
	1913	5	9224.79	789.53	1710.46	125.23	1417.19	98.71	1.2	1.90	3.17	2.44	4.07
	1914	6	10740.15	765.12	2140.84	123.91	1736.5	98.71	1.2	1.76	2.94	2.35	3.92
	1915	7	12525.63	739.28	2385.59	121.98	1923.85	98.71	1.2	1.88	3.14	2.26	3.77
	1423	7	12525.63	739.28	3073.25	50.04	2187.14	68.65	1.2	1.50	2.50	3.77	6.30
	1916	8	13755.38	726.36	3261.45	40.26	2450.05	68.65	1.2	1.49	2.49	3.77	6.30
	1422	8	13755.38	726.36	3261.59	45.28	2450.07	55.31	1.2	1.49	2.49	4.63	7.74
	1917	9	12471.41	736.41	2754.1	49.67	2000.17	55.31	1.2	1.71	2.85	4.66	7.79
	1918	10	10553.47	753.64	2429.21	50.62	2008.92	55.31	1.2	1.41	2.36	4.78	7.98
	1421	10	10553.47	753.64	2342.8	118.23	2008.98	91.15	1.2	1.44	2.40	2.53	4.22
1919	11	8941.87	769.43	1816.62	120.61	1599.03	91.15	1.2	1.58	2.64	2.58	4.31	
1920	12	7185.94	808.19	1219.82	124.76	1236.64	91.15	1.2	1.74	2.90	2.72	4.55	
1420	12	7185.94	808.19	1106.1	222.91	878.41	126.7	1.2	2.51	4.20	1.57	2.62	
1921	13	10129.75	852.69	2125.77	225.15	881.32	126.7	1.2	3.21	5.36	1.70	2.83	
1922	14	13079.16	879.96	3276.39	228.16	1359.63	126.7	1.2	2.49	4.16	1.77	2.95	
1923	15	16320.77	911.54	4629.96	232.23	1989.91	126.7	1.2	1.99	3.32	1.85	3.09	
36-37	314	1	13154.32	884.27	4288.01	169.36	1649.41	100.61	1.27	1.67	2.78	2.40	4.00
	1926	2	9818.55	831.15	2413.24	162.66	1281.51	100.61	1.27	1.89	3.16	2.23	3.73
	1927	3	6842.26	778.04	1671.4	160.41	1131.9	100.61	1.27	1.50	2.50	2.05	3.43
	1426	3	6842.26	778.04	860.58	64.95	1066.45	43.59	1.27	1.95	3.25	5.77	9.64
	1928	4	6281.57	727.80	418.08	60.92	1371.43	43.59	1.27	1.52	2.54	5.40	9.02
1425	4	6281.57	727.80	418.33	23.32	1371.26	63.14	1.27	1.52	2.54	4.01	6.69	

Lakefront Trestle - 2F1 Girder Ratings



Made By: CTG  
Checked By: DMP

Date: 4/10/2012  
Date: 4/13/2012

Job No.: P402110046  
Sheet No.: \_\_\_\_\_

Girder Rating - As Built

Girders			Girder Spreadsheet Section	CAPACITIES		SERVICE LOAD				IMPACT	RATING FACTORS - 2F1	
Bents	STAAD Beam	Moment (kip-ft)		Shear (kips)	DEAD LOAD		2F1		Moment Oper.		Shear Oper.	
					M <sub>DL</sub> (k-ft)	V <sub>DL</sub> (k)	M <sub>LL</sub> (k-ft)	V <sub>LL</sub> (k)				
SECTION A - NORTH	14-15	271	End	4694.37	603.39	849.89	68.49	333.98	25.26	1.27	6.51	12.33
		1716	Mid	6697.01	603.39	1331.27	59.68	546.42	25.26	1.27	5.51	12.61
		415	Mid	6697.01	603.39	1331.32	68.52	546.69	30.09	1.27	5.50	10.35
		1717	End	4694.37	603.39	963.26	78.6	381.17	30.09	1.27	5.47	10.09
	15-16	272	n/a	2559.85	487.18	306.82	4.83	188.73	8.76	1.30	6.78	32.48
	16-17	273	End	4694.37	603.39	803.7	64.59	390.44	31.39	1.28	5.62	9.94
		1720	Mid	5795.99	603.39	1095.64	54.51	563.07	31.39	1.28	4.67	10.20
		479	Mid	5795.99	603.39	1095.65	50.5	563.07	26.69	1.28	4.67	12.11
1722		End	4694.37	603.39	825.74	60.4	416.3	26.69	1.28	5.23	11.82	
SECTION A - SOUTH	14-15	294	End	4694.37	603.39	749.16	61.14	314.53	23.86	1.27	7.16	13.30
		1718	Mid	6697.01	603.39	1173.31	52.37	517.3	23.86	1.27	6.06	13.59
		416	Mid	6697.01	603.39	1173.34	59.83	517.54	28.45	1.27	6.05	11.19
		1719	End	4694.37	603.39	853.08	69.91	361.05	28.45	1.27	6.01	10.91
	15-16	295	n/a	2559.85	487.18	268.6	3.75	186.5	8.66	1.30	7.01	32.95
	16-17	296	End	4694.37	603.39	734.81	60.14	374.01	30.23	1.27	6.06	10.52
		1721	Mid	5795.99	603.39	1002.28	50.06	540.28	30.23	1.27	5.04	10.79
		480	Mid	5795.99	603.39	1002.28	43.71	540.27	24.64	1.27	5.04	13.44
1723		End	4694.37	603.39	769.69	53.98	404.74	24.64	1.27	5.53	13.11	
SECTION B - NORTH	17-18	274	1	2233.54	338.78	125.4	13.74	58.88	5.94	1.30	20.81	31.97
		1724	2	2327.59	350.26	225.52	15.28	99.83	5.94	1.3	12.06	32.91
		1725	3	2684.18	392.75	339.38	16.93	141.8	5.94	1.3	9.36	36.93
		1726	4	3095.15	439.84	412.53	17.94	166.7	5.94	1.3	9.08	41.49
	18-19	275	1	2973.15	426.06	583.53	71	251.4	29.75	1.27	5.34	6.80
		1730	2	6232.06	419.17	1327.98	67.09	596.56	29.75	1.27	4.57	6.76
		1387	2	6232.06	419.17	1328.2	69.28	596.7	32.15	1.27	4.57	6.20
		1732	3	6909.10	460.51	1095.89	73.12	487.72	32.15	1.27	6.81	6.89
		1734	4	3651.07	500.70	487.8	74.85	213.14	32.15	1.27	8.57	7.60
		1736	5	4089.05	546.64	759.2	77.43	319.6	32.15	1.27	5.88	8.40
	19-20	276	1	3835.28	520.23	573.86	24.6	246.7	9.11	1.30	7.41	31.71
		1738	2	3322.54	465.10	453.84	23.31	201.05	9.11	1.3	8.04	28.24
		1739	3	3857.14	522.52	118.98	19.44	58.27	9.11	1.3	37.60	32.30
	SECTION B - SOUTH	17-18	297	1	2205.51	335.33	111.34	12.33	63.93	6.45	1.30	19.07
1727			2	2346.52	352.56	209.68	14	112.11	6.45	1.3	10.95	30.67
1728			3	2713.69	396.20	318.59	15.71	159.39	6.45	1.3	8.54	34.47
1729			4	3074.72	437.54	386.79	16.73	186.51	6.45	1.3	8.16	38.14
18-19		298	1	2973.15	426.06	540.98	66.39	277.28	33.15	1.27	4.96	6.21
		1731	2	6232.06	419.17	1239.16	62.48	667.44	33.15	1.27	4.19	6.17
		1408	2	6232.06	419.17	1239.17	63.61	667.17	35.5	1.27	4.20	5.74
		1733	3	6909.10	460.51	1026.06	67.45	546.82	35.5	1.27	6.18	6.36
		1735	4	3651.07	500.70	466.37	69.18	243.6	35.5	1.27	7.57	7.01
		1737	5	4089.05	546.64	686.65	71.76	344.68	35.5	1.27	5.62	7.73
19-20		299	1	3879.04	524.82	520.33	21.16	264.83	8.85	1.30	7.16	33.25
		1740	2	3343.45	467.40	419.26	19.88	221.23	8.85	1.3	7.48	29.52
		1741	3	4033.44	540.90	91.35	15.25	56.05	8.85	1.3	41.33	34.84



Lakefront Trestle - 2F1 Girder Ratings



Made By: CTG  
Checked By: DMP

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Date: 4/13/2012

Job No.: P402110046  
Sheet No.: \_\_\_\_\_

Girder Rating - As Built

SECTION C - NORTH	SECTION C - SOUTH	Girders	Girder Spreadsheet	CAPACITIES		SERVICE LOAD				IMPACT	RATING FACTORS - 2F1		
						DEAD LOAD		2F1			Moment	Shear	
SECTION C - NORTH	20-21	277	1	6686.03	560.42	439.38	82.96	224.31	38.98	1.26	16.64	7.09	
		1742	2	6136.19	521.37	773.12	80.91	382.43	38.98	1.26	8.19	6.52	
		1743	3	6693.95	477.73	1352.08	77.18	681.27	38.98	1.26	4.42	5.91	
		1389	3	6693.95	477.73	1351.97	26.72	681.2	21.06	1.26	4.42	12.84	
		1744	4	5503.98	475.44	1062.46	31.15	582.9	21.06	1.26	4.32	12.61	
		1388	4	5503.98	475.44	715.48	125.37	582.87	43.61	1.26	4.79	4.37	
		1745	5	6136.19	521.37	968.86	128.78	393.61	43.61	1.26	7.56	4.96	
		1746	6	6751.47	565.01	1612.41	130.71	334.3	43.61	1.26	8.50	5.53	
		1747	7	7330.82	605.21	2363.94	132.96	474.98	43.61	1.26	5.47	6.05	
	21-22	278	1	6527.93	605.21	2316.76	118.96	511.66	39.03	1.25	4.23	7.10	
		1754	2	6009.84	566.16	1646.12	116.88	294.39	39.03	1.25	8.09	6.53	
		1755	3	5006.36	530.56	955.8	114.76	262.96	39.03	1.25	8.81	6.01	
		1756	4	4489.63	485.77	640.32	112.74	519.59	39.03	1.25	4.33	5.35	
		1391	4	4489.63	485.77	774.55	19.36	519.56	15.91	1.25	4.13	17.82	
		1757	5	5234.00	476.59	1029.61	17.08	550.81	15.91	1.25	4.35	17.58	
		1390	5	5234.00	476.59	1029.81	94.49	550.77	39.31	1.25	4.35	5.54	
		1758	6	4832.44	515.63	511.76	96.47	332.98	39.31	1.25	7.70	6.11	
		1759	7	5345.51	559.27	920.54	99.23	255.26	39.31	1.25	10.00	6.74	
	1760	8	5929.23	607.50	1488.64	101.12	472.46	39.31	1.25	5.20	7.45		
	22-23	279	1	5386.63	591.43	1355.71	79.71	359.34	33.87	1.29	6.01	8.59	
		1767	2	4784.97	538.60	949.34	78.09	319.41	33.87	1.29	6.63	7.70	
		1768	3	4204.26	485.77	586.49	76.66	519	33.87	1.29	3.95	6.80	
		1392	3	4204.26	485.77	469.71	22.33	519.05	25.45	1.29	4.13	10.70	
		1769	4	4733.64	534.01	232.12	23.7	226.15	25.45	1.29	11.69	11.79	
	SECTION C - SOUTH	20-21	1770	5	5346.75	587.98	128.57	25.85	111.63	25.45	1.29	27.67	12.99
			300	1	5825.45	545.49	525.56	88.23	228.29	39.95	1.25	13.86	6.64
			1748	2	5310.32	505.30	1229	84.82	606.77	39.95	1.25	3.77	6.09
			1749	3	6873.69	470.84	1622.84	81.01	803.68	39.95	1.25	3.65	5.63
1410			3	6873.69	470.84	1622.74	17.51	803.63	25.85	1.25	3.65	10.67	
1750			4	7006.01	478.88	1446.64	22.95	685.29	25.85	1.25	4.60	10.69	
1409			4	7006.01	478.88	1200.92	109.29	685.09	53.52	1.25	4.89	3.87	
1751			5	5573.72	525.97	652.16	112.18	413.55	53.52	1.25	7.03	4.37	
1752		6	6110.17	567.31	820.59	113.93	311.51	53.52	1.25	9.96	4.82		
1753		7	6613.18	605.21	1479.45	116.02	601.46	53.52	1.25	4.80	5.22		
21-22		395	1	5746.69	588.50	1273.52	50.22	506.82	32.89	1.28	4.85	9.56	
		1761	2	5154.82	543.19	951.15	48.05	427.87	32.89	1.28	5.50	8.78	
		1762	3	6150.56	500.70	714.93	46.45	369.69	32.89	1.28	8.49	8.05	
		1763	3	6150.56	500.70	392.01	43.65	603.42	32.89	1.28	5.62	8.11	
		1427	4	5741.52	471.99	438.41	42.11	603.44	34	1.28	5.15	7.37	
		1764	5	6150.56	500.70	749.94	44.9	349.79	34	1.28	8.89	7.82	
		1765	6	5168.38	544.34	985.42	46.56	404.6	34	1.28	5.77	8.55	
		1766	7	5760.67	593.72	1220.57	48.2	457.7	34	1.28	5.48	9.39	
22-23		396	1	6597.77	559.39	1562.57	115.44	611.04	48.83	1.25	4.60	5.16	
		1771	2	5959.87	555.83	904.84	113.35	336.67	48.83	1.25	8.74	5.15	
		1772	3	5368.57	509.89	908.57	110.36	487	48.83	1.25	5.29	4.62	
		1773	4	6930.34	474.29	1317.77	107.6	671.97	48.83	1.25	4.78	4.21	
	1429	4	6930.34	474.29	1496.17	17.4	672.04	21.22	1.25	4.57	13.10		
	1774	5	7043.90	481.18	1606.18	11.95	793.41	21.22	1.25	3.84	13.50		
	1428	5	7043.90	481.18	1606.38	85.45	793.49	40.74	1.25	3.84	5.59		
	1775	6	5677.03	534.01	947.03	88.29	472.46	40.74	1.25	5.79	6.33		
1776	7	6170.56	571.90	241.23	89.78	141.43	40.74	1.25	25.48	6.88			
1930	8	6613.18	605.21	628.52	91.78	258.19	40.74	1.25	13.81	7.34			

Lakefront Trestle - 2F1 Girder Ratings



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Girder Rating - As Built

Girders	Girder Spreadsheet	CAPACITIES		SERVICE LOAD						RATING FACTORS - 2F1			
				DEAD LOAD		2F1		IMPACT	Moment	Shear			
SECTION D - NORTH	23-24	280	1	4044.23	586.83	132.62	26.57	66.7	13.04	1.30	34.35	25.06	
		1777	2	3618.93	539.75	429.74	29.14	205.82	13.04	1.3	8.80	22.77	
		1778	3	4002.01	582.24	613.97	30.67	286.15	13.04	1.3	6.63	24.61	
	24-25	281	1	4542.86	592.57	669.99	67.79	318.63	31.23	1.28	6.93	9.71	
		1780	2	4055.65	543.19	254.78	66.09	124.89	31.23	1.28	17.92	8.80	
		1781	3	3640.33	499.55	592.93	64.82	286.35	31.23	1.28	6.02	7.99	
		1782	4	5915.47	470.84	1052.6	62.7	520.79	31.23	1.28	5.25	7.49	
		1393	4	5915.47	470.84	1052.61	66.5	520.9	32.8	1.28	5.25	7.04	
		1783	5	3640.33	499.55	564.78	68.45	274.86	32.8	1.28	6.35	7.52	
		1784	6	4055.65	543.19	286.39	69.72	135.32	32.8	1.28	16.36	8.29	
	25-26	282	1	3238.68	383.03	699.34	54.97	333.33	25.53	1.30	4.14	7.22	
		1792	2	2202.42	427.33	235.3	53.09	114.06	25.53	1.3	9.84	8.30	
	SECTION D - SOUTH	23-24	301	1	2244.34	413.62	167.73	40.96	89.74	21.7	1.30	13.36	9.83
			1779	2	3262.62	325.45	658.3	43.51	341.81	21.7	1.3	4.17	7.33
24-25		302	1	4542.86	592.57	708.01	61.4	370.23	30.93	1.28	5.88	9.96	
		1786	2	4055.65	543.19	332.7	59.71	178.5	30.93	1.28	12.20	9.05	
		1787	3	3565.38	491.52	570.99	58.44	306.1	30.93	1.28	5.54	8.07	
		1788	4	4184.44	468.55	846.39	55.7	461.1	30.93	1.28	4.02	7.70	
		1411	4	4184.44	468.55	846.35	52.42	461.17	29.07	1.28	4.02	8.28	
		1789	5	3565.38	491.52	588.43	55.16	316.1	29.07	1.28	5.32	8.68	
		1790	6	4055.65	543.19	263.91	56.43	139.33	29.07	1.28	16.01	9.71	
25-26		1791	7	4554.41	572.07	620.12	58.13	320.12	29.07	1.28	7.04	10.26	
		303	1	3278.60	319.42	537.85	24.79	282.72	11.66	1.30	5.40	14.57	
		1793	2	2986.18	390.38	386.25	23.41	209.39	11.66	1.3	7.02	18.27	
SECTION E - NORTH		26-27	1794	3	2202.42	424.93	100.85	20.64	58.31	11.66	1.3	21.02	20.20
			283	1	6520.92	598.32	296.16	67.61	119.84	26.32	1.27	31.01	11.75
	1795		2	5944.89	554.68	400.8	65.39	159.4	26.32	1.27	20.61	10.81	
	1796		3	5383.16	511.04	920.45	63.8	378.74	26.32	1.27	6.70	9.85	
	1797		4	7062.86	482.33	1188.18	60.92	496.35	26.32	1.27	6.73	9.28	
	1798		5	7728.59	469.70	1616.11	58.91	693.74	26.32	1.27	4.91	9.05	
	1394		5	7728.59	469.70	1615.96	73.11	693.71	34.8	1.27	4.91	6.52	
	1799		6	7024.95	480.03	1081.5	75.14	432.72	34.8	1.27	7.87	6.65	
	1800		7	5368.57	509.89	745.74	78.19	275.1	34.8	1.27	9.69	7.11	
	1801		8	5944.89	554.68	324.36	79.95	205.18	34.8	1.27	16.30	7.85	
	27-28	1802	9	6520.92	598.32	824.24	82.19	419.74	34.8	1.27	7.86	8.55	
		284	1	5161.84	571.90	634.42	5.16	355.76	13.9	1.30	7.21	24.06	
		1809	2	4429.00	506.44	608.35	3.23	269.39	13.9	1.3	7.99	21.38	
		1811	3	4105.40	476.59	597.81	2.04	213.78	13.9	1.3	9.21	20.18	
1813		4	4429.00	506.44	601.69	2.55	256.73	13.9	1.3	8.41	21.42		
28-29	1815	5	5148.70	570.75	623.13	4.45	336.89	13.9	1.3	7.62	24.05		
	285	1	6520.92	598.32	810.34	81.06	403.41	33.48	1.27	8.21	8.92		
	1817	2	5944.89	554.68	312.4	78.8	194.87	33.48	1.27	17.22	8.18		
	1818	3	5368.57	509.89	744.1	77.03	268.22	33.48	1.27	9.94	7.41		
	1819	4	7024.95	480.03	1068.16	73.98	416.86	33.48	1.27	8.19	6.94		
	1820	5	7728.59	469.70	1593.9	71.98	667.8	33.48	1.27	5.13	6.80		
	1395	5	7728.59	469.70	1594.08	57.77	667.83	25.13	1.27	5.13	9.51		
	1821	6	7062.86	482.33	1174.69	59.81	479.36	25.13	1.27	6.99	9.75		
	1822	7	5383.16	511.04	906.64	62.69	364.79	25.13	1.27	6.98	10.35		
	1823	8	5944.89	554.68	396.25	64.29	155.41	25.13	1.27	21.16	11.35		
1824	9	6520.92	598.32	274.33	66.42	105.64	25.13	1.27	35.34	12.34			

Lakefront Trestle - 2F1 Girder Ratings



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Girder Rating - As Built

Girders	Girder Spreadsheet	CAPACITIES		SERVICE LOAD						RATING FACTORS - 2F1		
				DEAD LOAD		2F1		IMPACT	Moment	Shear		
SECTION E - SOUTH	26-27	304	1	6536.27	599.46	273.65	59.1	132.26	26.38	1.26	28.53	12.09
		1803	2	5959.87	555.83	370.34	56.82	165.46	26.38	1.26	20.21	11.15
		1804	3	5383.16	511.04	894.93	55.04	424.88	26.38	1.26	6.06	10.17
		1805	4	6930.34	474.29	1481.01	51.65	740.59	26.38	1.26	4.13	9.42
		1412	4	6930.34	474.29	1481.02	70.83	740.63	38.37	1.26	4.13	6.08
		1806	5	5368.57	509.89	663.26	73.88	280.19	38.37	1.26	9.82	6.58
		1807	6	5944.89	554.68	347.32	75.64	249.39	38.37	1.26	13.45	7.26
	1808	7	6520.92	598.32	823.18	77.89	487.24	38.37	1.26	6.83	7.91	
	27-28	305	1	5161.84	571.90	629.19	4.08	411.98	16.14	1.30	6.24	20.77
		1810	2	4429.00	506.44	609.82	2.15	312.52	16.14	1.3	6.88	18.46
		1812	3	4105.40	476.59	612.25	2.44	253.43	16.14	1.3	7.73	17.36
		1814	4	4429.00	506.44	624.4	3.63	318.01	16.14	1.3	6.73	18.39
	28-29	1816	5	5148.70	570.75	652.45	5.53	416.79	16.14	1.3	6.11	20.66
		306	1	6520.92	598.32	838.93	78.95	494.96	38.94	1.26	6.70	7.77
		1825	2	5944.89	554.68	354.13	76.69	252.39	38.94	1.26	13.27	7.13
		1826	3	5368.57	509.89	673.16	74.92	286.23	38.94	1.26	9.58	6.47
		1827	4	6930.34	474.29	1499.19	71.87	751.04	38.94	1.26	4.05	5.97
		1413	4	6930.34	474.29	1499.26	52.21	751.03	26.54	1.26	4.05	9.35
		1828	5	5368.57	509.89	904.98	55.6	432.54	26.54	1.26	5.92	10.07
	1829	6	5944.89	554.68	374.9	57.37	171.54	26.54	1.26	19.42	11.04	
	1830	7	6520.92	598.32	281.26	59.69	130.63	26.54	1.26	28.77	11.98	
SECTION F - NORTH	29-30	286	1	5161.84	571.90	148.17	25.18	57.78	9.45	1.30	50.89	33.76
		1831	2	4429.00	506.44	264.51	26.52	100.3	9.45	1.3	24.10	29.55
		1832	3	4068.50	473.14	593.72	29.91	210.54	9.45	1.3	9.27	27.19
		1833	4	4441.58	507.59	729.79	31.24	252.59	9.45	1.3	8.18	29.24
		1834	5	5174.98	573.05	935.53	33.23	312.9	9.45	1.3	7.49	33.18
	30-31	287	1	5493.40	600.61	1063.78	91.7	364.35	30.46	1.26	6.89	9.65
		1839	2	4888.10	547.79	504.31	89.75	176.51	30.46	1.26	14.64	8.64
		1841	3	4366.25	500.70	957.73	87.17	334.19	30.46	1.26	5.70	7.76
		1843	4	5293.91	481.18	1097.96	84.7	384.8	30.46	1.26	6.13	7.44
		1845	5	8936.33	470.84	1890.67	84.11	681.44	30.46	1.26	5.80	7.25
		1396	5	8936.33	470.84	1890.71	84.49	681.42	30.38	1.26	5.80	7.25
		1847	6	5293.91	481.18	1092.63	85.14	384.93	30.38	1.26	6.14	7.45
		1849	7	4366.25	500.70	936.68	87.61	329.07	30.38	1.26	5.84	7.77
		1851	8	4901.04	548.94	516.72	90.14	174.87	30.38	1.26	14.77	8.68
	1853	9	5506.79	601.76	1076.8	92.09	361.62	30.38	1.26	6.93	9.69	
	31-32	288	1	5201.30	575.35	911.91	31.86	308.99	9.06	1.30	7.69	34.87
		1855	2	4466.77	509.89	721.35	29.94	253.14	9.06	1.3	8.25	30.76
		1856	3	4093.09	475.44	585.64	28.55	211.12	9.06	1.3	9.34	28.63
		1857	4	4656.95	527.12	247.33	24.86	96.42	9.06	1.3	26.61	32.32
		1858	5	5641.25	613.25	130.53	23.4	52.59	9.06	1.3	61.56	38.07

Lakefront Trestle - 2F1 Girder Ratings



Made By: CTG  
Checked By: DMP

Date: 4/10/2012  
Date: 4/13/2012

Job No.: P402110046  
Sheet No.: \_\_\_\_\_

Girder Rating - As Built

Girders	Girder Spreadsheet	CAPACITIES		SERVICE LOAD					RATING FACTORS - 2F1			
				DEAD LOAD		2F1		IMPACT	Moment	Shear		
SECTION F - SOUTH	29-30	307	1	5188.13	574.20	126.56	20.23	63.74	9.67	1.30	46.64	33.53
		1835	2	4441.58	507.59	231.44	21.72	112.1	9.67	1.3	21.86	29.33
		1836	3	3921.76	459.36	529.66	25.37	234.61	9.67	1.3	8.15	26.09
		1837	4	4466.77	509.89	663.89	26.9	284.28	9.67	1.3	7.50	29.06
		1838	5	5214.47	576.50	835.5	28.82	343.86	9.67	1.3	7.10	32.98
	30-31	308	1	5493.40	600.61	975.18	85.61	408.8	34.9	1.26	6.31	8.56
		1840	2	4888.10	547.79	453.24	83.65	193.55	34.9	1.26	13.56	7.68
		1842	3	4366.25	500.70	906.57	81.07	391.6	34.9	1.26	4.97	6.92
		1844	4	5293.91	481.18	1036.68	78.6	449.59	34.9	1.26	5.36	6.63
		1846	5	8936.33	470.84	1770.08	78.01	789.49	34.9	1.26	5.13	6.46
		1414	5	8936.33	470.84	1770.07	79.09	789.57	35.24	1.26	5.13	6.38
		1848	6	5293.91	481.18	1024.67	79.74	445.65	35.24	1.26	5.43	6.54
		1850	7	4366.25	500.70	878.63	82.21	380.85	35.24	1.26	5.17	6.82
		1852	8	4901.04	548.94	485.23	84.74	203.69	35.24	1.26	12.80	7.60
	1854	9	5506.79	601.76	1012.14	86.69	420.31	35.24	1.26	6.09	8.47	
	31-32	309	1	5214.47	576.50	863.98	30.22	357.02	10.34	1.30	6.78	30.74
		1859	2	4479.38	511.04	683.58	28.29	293.29	10.34	1.3	7.24	27.14
		1860	3	4130.06	478.88	549.19	26.84	242.9	10.34	1.3	8.32	25.41
		1861	4	4644.20	525.97	232.69	23.14	111.99	10.34	1.3	22.94	28.38
		1862	5	5654.75	614.39	126.19	21.71	62.9	10.34	1.3	51.65	33.54
SECTION G - NORTH	32-33	289	1	6028.50	647.53	588.92	107.97	211.84	37.53	1.24	15.41	8.38
		1863	2	6094.81	592.57	1359.13	104.11	505.86	37.53	1.24	5.31	7.56
		1864	3	7824.06	568.46	1642.63	101.4	611.43	37.53	1.24	5.77	7.22
		1865	4	10777.45	543.19	2439.94	100.18	917.47	37.53	1.24	5.14	6.83
		1398	4	10777.45	543.19	2439.82	33.77	917.43	25.25	1.24	5.14	12.27
		1866	5	10357.76	523.67	2285.11	40.52	798.52	25.25	1.24	5.74	11.57
		1867	6	7331.16	537.45	1854.56	46.28	585.48	25.25	1.24	5.21	11.73
		1397	6	7331.16	537.45	1272.01	157.51	585.02	49	1.24	6.02	4.21
		1868	7	5847.41	573.05	918.67	159.78	474.76	49	1.24	6.08	4.63
	1869	8	6285.93	607.50	1222.17	162.14	236.99	49	1.24	12.30	5.02	
	1870	9	7559.36	645.03	2619.58	165.47	613.51	49	1.24	4.20	5.44	
	33-34	290	1	7464.66	635.59	2404.65	123.71	521.71	32.9	1.29	4.96	8.61
		1877	2	6886.06	605.21	1675.65	121.4	434.8	32.9	1.29	6.46	8.11
		1878	3	5775.19	567.31	1328.23	120.31	392.79	32.9	1.29	6.15	7.45
		1879	4	5347.06	532.86	538.72	118.04	505.26	32.9	1.29	5.48	6.88
1399		4	5347.06	532.86	478.55	19.53	505.38	22.5	1.29	5.58	13.45	
1880		5	5905.36	577.65	317.35	22.79	304.21	22.5	1.29	10.77	14.52	
1881	6	6028.50	644.90	116.38	24.84	90.45	22.5	1.29	38.75	16.24		

Lakefront Trestle - 2F1 Girder Ratings



Made By: CTG  
 Checked By: DMP

Date: 4/10/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

Girder Rating - As Built

Girders	Girder Spreadsheet	CAPACITIES		SERVICE LOAD						RATING FACTORS - 2F1		
				DEAD LOAD		2F1		IMPACT	Moment	Shear		
SECTION G - SOUTH	32-33	1416	1	5745.07	612.76	115.86	29.56	77.59	23.01	1.27	43.67	15.12
		1871	2	5929.23	607.50	248.66	27.4	192.6	23.01	1.27	17.63	15.05
		1872	3	5359.21	560.42	489.78	25.73	422.69	23.01	1.27	6.77	13.87
		1873	4	4992.92	529.41	673.64	22.49	623.15	23.01	1.27	4.00	13.17
		1415	4	4992.92	529.41	673.72	74.51	623.16	33.64	1.27	4.00	7.79
		1874	5	5359.21	560.42	742.02	77.75	321.93	33.64	1.27	8.27	8.27
		1875	6	5929.23	607.50	1125.82	79.38	303.58	33.64	1.27	8.91	9.08
		1876	7	5745.07	632.30	1604.68	81.43	379.23	33.64	1.27	5.84	9.48
	33-34	311	1	6486.10	642.63	1670.75	106.9	389.46	40.32	1.25	6.82	7.69
		1882	2	7289.94	615.54	1052.38	104.51	312.89	40.32	1.25	11.65	7.32
		1883	3	7787.30	566.16	793.98	101.59	605.36	40.32	1.25	6.87	6.63
		1418	4	7186.50	528.26	1381.84	34.74	665.57	20.4	1.25	4.98	14.57
		1884	5	8393.98	542.04	1508.27	26.54	754.39	20.4	1.25	5.25	15.31
		1417	5	8393.98	542.04	1508.37	69.5	754.06	35.86	1.25	5.25	7.75
		1885	6	7879.28	571.90	1182.33	72.18	583.02	35.86	1.25	6.69	8.20
		1886	7	6174.38	613.25	745.64	74.73	361.95	35.86	1.25	8.85	8.86
	1887	8	5867.25	653.13	240.53	76.78	113.47	35.86	1.25	30.12	9.50	
SECTION H - NORTH	34-35	291	1	7103.62	801.01	285.71	27.02	350.99	30.44	1.27	11.62	15.24
		1888	2	6424.30	740.72	495.71	22.53	661.07	30.44	1.27	5.30	14.16
		1401	2	6424.30	740.72	857.78	68.47	661.17	22.96	1.27	4.86	17.19
		1400	3	6761.23	770.86	1868	183.46	514.08	46.9	1.27	5.10	6.88
		1889	4	9448.78	805.32	2702.42	185.64	563.55	46.9	1.27	6.38	7.28
		1890	5	12954.14	872.78	4762.6	192.09	738.53	46.9	1.27	5.55	8.05
	35-36	292	1	13024.07	911.54	5078.99	257.6	868.46	58.98	1.20	4.74	6.27
		1896	2	11645.15	879.96	3501.71	253.91	583.68	58.98	1.2	7.79	5.98
		1897	3	10171.45	855.56	2254.66	251.22	383.95	58.98	1.2	12.09	5.75
		1898	4	7202.44	809.62	1207.12	249.15	457.39	58.98	1.2	7.89	5.28
		1406	4	7202.44	809.62	1366.74	137.85	564.05	44.88	1.2	6.17	9.00
		1899	5	8941.87	769.43	2030.29	133.89	755.08	44.88	1.2	5.35	8.50
		1900	6	10553.47	753.64	2678.31	131.51	966.91	44.88	1.2	4.69	8.32
		1405	6	10553.47	753.64	2755.77	60.03	967.11	30.37	1.2	4.62	14.26
		1901	7	12101.89	736.41	3391.02	59.31	998.98	30.37	1.2	4.94	13.92
		1902	8	13384.98	726.36	3799.41	52.18	1196.51	30.37	1.2	4.52	13.90
		1404	8	13384.98	726.36	3799.36	50.65	1196.52	34.61	1.2	4.52	12.23
		1903	9	12420.03	753.64	3371.77	57.65	953.56	34.61	1.2	5.40	12.57
		1403	9	12420.03	753.64	2769.5	140.25	948.49	47.01	1.2	5.96	7.79
		1904	10	10951.11	778.04	1549.24	141.89	559.05	47.01	1.2	10.25	8.09
		1905	11	9123.47	782.35	1131.31	143.32	455.81	47.01	1.2	10.76	8.13
		1906	12	7268.57	815.36	707.69	145.4	416.43	47.01	1.2	9.77	8.54
		1402	12	7268.57	815.36	1585.78	216.16	393.72	57.37	1.2	8.48	5.97
		1907	13	10129.75	852.69	2365.51	217.93	522.24	57.37	1.2	8.66	6.36
	1908	14	13029.12	877.09	3486.88	220.96	731.41	57.37	1.2	7.45	6.59	
	1909	15	16291.51	910.11	4636.1	224.53	965.09	57.37	1.2	6.82	6.91	
	36-37	293	1	12954.14	872.78	4265.18	162.99	862.08	33.66	1.30	5.09	11.62
		1924	2	9346.78	798.14	2701.46	157.21	647.03	33.66	1.3	5.34	10.44
		1925	3	6376.61	736.41	1567.29	153.7	495.82	33.66	1.3	5.18	9.43
		1407	3	6376.61	736.41	969.33	48.7	495.97	22.83	1.3	6.10	17.45

Lakefront Trestle - 2F1 Girder Ratings



Made By: CTG  
Checked By: DMP

Date: 4/10/2012  
Date: 4/13/2012

Job No.: P402110046  
Sheet No.: \_\_\_\_\_

Girder Rating - As Built

SECTION H - SOUTH	Girders	Girder Spreadsheet	CAPACITIES		SERVICE LOAD				IMPACT	RATING FACTORS - 2F1	
					DEAD LOAD		2F1			Moment	Shear
34-35	312	1	7103.62	801.01	231.94	38.51	136.73	21.99	1.30	29.44	20.21
	1891	2	6712.76	766.56	436.02	40.48	250.34	21.99	1.3	14.53	19.21
	1892	3	6344.89	733.54	874.34	44.36	477.52	21.99	1.3	6.45	18.19
	1419	3	6344.89	733.54	1424.04	138.14	477.6	33.21	1.3	5.57	9.87
	1893	4	8982.14	772.30	2579.89	142.07	647.8	33.21	1.3	5.14	10.47
	1894	5	12161.35	826.85	3080.68	144.11	721.61	33.21	1.3	6.69	11.39
	1895	6	13104.20	881.40	3841.82	147.2	831.83	33.21	1.3	5.77	12.29
35-36	313	1	16408.63	915.85	4242.91	202.17	951.88	53.84	1.20	7.34	7.78
	1910	2	13154.32	884.27	2794.48	197.13	641.87	53.84	1.2	9.51	7.48
	1911	3	10150.59	854.12	1598.14	193.5	408.02	53.84	1.2	12.68	7.17
	1912	4	7268.57	815.36	732.41	191.28	359.67	53.84	1.2	11.26	6.75
	1424	4	7268.57	815.36	1367.97	129.88	540.62	44.76	1.2	6.51	9.26
	1913	5	9224.79	789.53	1710.46	125.23	652.91	44.76	1.2	6.87	8.98
	1914	6	10740.15	765.12	2140.84	123.91	795.88	44.76	1.2	6.41	8.65
	1915	7	12525.63	739.28	2385.59	121.98	883.09	44.76	1.2	6.84	8.32
	1423	7	12525.63	739.28	3073.25	50.04	985.05	32.45	1.2	5.55	13.32
	1916	8	13755.38	726.36	3261.45	40.26	1121.22	32.45	1.2	5.44	13.31
	1422	8	13755.38	726.36	3261.59	45.28	1121.38	27.77	1.2	5.44	15.41
	1917	9	12471.41	736.41	2754.1	49.67	921.04	27.77	1.2	6.19	15.51
	1918	10	10553.47	753.64	2429.21	50.62	934	27.77	1.2	5.08	15.88
	1421	10	10553.47	753.64	2342.8	118.23	934.02	44.19	1.2	5.15	8.70
	1919	11	8941.87	769.43	1816.62	120.61	747.81	44.19	1.2	5.64	8.89
1920	12	7185.94	808.19	1219.82	124.76	552.04	44.19	1.2	6.50	9.37	
1420	12	7185.94	808.19	1106.1	222.91	445.89	58.28	1.2	8.26	5.70	
1921	13	10129.75	852.69	2125.77	225.15	380.62	58.28	1.2	12.41	6.16	
1922	14	13079.16	879.96	3276.39	228.16	589.73	58.28	1.2	9.59	6.42	
1923	15	16320.77	911.54	4629.96	232.23	856.85	58.28	1.2	7.71	6.71	
36-37	314	1	13154.32	884.27	4288.01	169.36	710.06	46.56	1.27	6.47	8.64
	1926	2	9818.55	831.15	2413.24	162.66	551.62	46.56	1.27	7.34	8.06
	1927	3	6842.26	778.04	1671.4	160.41	507.24	46.56	1.27	5.58	7.41
	1426	3	6842.26	778.04	860.58	64.95	507.71	23.26	1.27	6.83	18.06
	1928	4	6281.57	727.80	418.08	60.92	668.02	23.26	1.27	5.20	16.89
	1425	4	6281.57	727.80	418.33	23.32	667.83	30.75	1.27	5.20	13.74

Lakefront Trestle - 3F1 Girder Ratings



Made By: CTG  
Checked By: DMP

Date: 4/10/2012  
Date: 4/13/2012

Job No.: P402110046  
Sheet No.: \_\_\_\_\_

Girder Rating - As Built

Girders			Girder Spreadsheet Section	CAPACITIES		SERVICE LOAD				IMPACT	RATING FACTORS - 3F1	
Bents	STAAD Beam	Moment (kip-ft)		Shear (kips)	DEAD LOAD		3F1		Moment Oper.		Shear Oper.	
					M <sub>DL</sub> (k-ft)	V <sub>DL</sub> (k)	M <sub>LL</sub> (k-ft)	V <sub>LL</sub> (k)				
SECTION A - NORTH	14-15	271	End	4694.37	603.39	849.89	68.49	506.54	38.31	1.27	4.29	8.13
		1716	Mid	6697.01	603.39	1331.27	59.68	828.69	38.31	1.27	3.63	8.31
		415	Mid	6697.01	603.39	1331.32	68.52	828.76	45.63	1.27	3.63	6.83
		1717	End	4694.37	603.39	963.26	78.6	577.78	45.63	1.27	3.61	6.65
	15-16	272	n/a	2559.85	487.18	306.82	4.83	277.1	12.86	1.30	4.61	22.13
	16-17	273	End	4694.37	603.39	803.7	64.59	573.15	46.08	1.28	3.83	6.77
		1720	Mid	5795.99	603.39	1095.64	54.51	826.6	46.08	1.28	3.18	6.95
		479	Mid	5795.99	603.39	1095.65	50.5	826.6	39.17	1.28	3.18	8.25
1722		End	4694.37	603.39	825.74	60.4	611.15	39.17	1.28	3.56	8.05	
SECTION A - SOUTH	14-15	294	End	4694.37	603.39	749.16	61.14	477.06	36.17	1.27	4.72	8.77
		1718	Mid	6697.01	603.39	1173.31	52.37	784.55	36.17	1.27	3.99	8.96
		416	Mid	6697.01	603.39	1173.34	59.83	784.61	43.15	1.27	3.99	7.38
		1719	End	4694.37	603.39	853.08	69.91	547.3	43.15	1.27	3.97	7.19
	15-16	295	n/a	2559.85	487.18	268.6	3.75	274.68	12.76	1.30	4.76	22.37
	16-17	296	End	4694.37	603.39	734.81	60.14	550.68	44.52	1.27	4.11	7.15
		1721	Mid	5795.99	603.39	1002.28	50.06	795.52	44.52	1.27	3.42	7.32
		480	Mid	5795.99	603.39	1002.28	43.71	795.52	36.28	1.27	3.42	9.12
1723		End	4694.37	603.39	769.69	53.98	595.98	36.28	1.27	3.75	8.90	
SECTION B - NORTH	17-18	274	1	2233.54	338.78	125.4	13.74	88.69	8.94	1.30	13.81	21.24
		1724	2	2327.59	350.26	225.52	15.28	150.38	8.94	1.3	8.01	21.87
		1725	3	2684.18	392.75	339.38	16.93	213.59	8.94	1.3	6.21	24.54
		1726	4	3095.15	439.84	412.53	17.94	251.1	8.94	1.3	6.03	27.57
	18-19	275	1	2973.15	426.06	583.53	71	378.74	44.86	1.27	3.54	4.51
		1730	2	6232.06	419.17	1327.98	67.09	899.76	44.86	1.27	3.03	4.48
		1387	2	6232.06	419.17	1328.2	69.28	899.54	48.49	1.27	3.03	4.11
		1732	3	6909.10	460.51	1095.89	73.12	735.17	48.49	1.27	4.52	4.56
		1734	4	3651.07	500.70	487.8	74.85	321.15	48.49	1.27	5.69	5.04
	19-20	1736	5	4089.05	546.64	759.2	77.43	482.47	48.49	1.27	3.89	5.57
		276	1	3835.28	520.23	573.86	24.6	372.51	13.76	1.30	4.91	21.00
		1738	2	3322.54	465.10	453.84	23.31	303.57	13.76	1.3	5.33	18.70
		1739	3	3857.14	522.52	118.98	19.44	87.99	13.76	1.3	24.90	21.38
SECTION B - SOUTH	17-18	297	1	2205.51	335.33	111.34	12.33	96.81	9.77	1.30	12.60	19.34
		1727	2	2346.52	352.56	209.68	14	169.78	9.77	1.3	7.23	20.25
		1728	3	2713.69	396.20	318.59	15.71	241.39	9.77	1.3	5.64	22.76
		1729	4	3074.72	437.54	386.79	16.73	282.47	9.77	1.3	5.39	25.18
	18-19	298	1	2973.15	426.06	540.98	66.39	419.84	50.16	1.27	3.27	4.10
		1731	2	6232.06	419.17	1239.16	62.48	1009.83	50.16	1.27	2.77	4.08
		1408	2	6232.06	419.17	1239.17	63.61	1009.88	53.72	1.27	2.77	3.79
		1733	3	6909.10	460.51	1026.06	67.45	827.78	53.72	1.27	4.08	4.20
		1735	4	3651.07	500.70	466.37	69.18	368.98	53.72	1.27	5.00	4.63
	19-20	1737	5	4089.05	546.64	686.65	71.76	521.12	53.72	1.27	3.72	5.11
		299	1	3879.04	524.82	520.33	21.16	400.27	13.37	1.30	4.73	22.01
		1740	2	3343.45	467.40	419.26	19.88	334.38	13.37	1.3	4.95	19.54
		1741	3	4033.44	540.90	91.35	15.25	84.71	13.37	1.3	27.34	23.06

Lakefront Trestle - 3F1 Girder Ratings



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Job No.: P402110046  
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Girder Rating - As Built

SECTION C - NORTH	SECTION C - SOUTH	Girders	Girder Spreadsheet	CAPACITIES		SERVICE LOAD				IMPACT	RATING FACTORS - 3F1		
						DEAD LOAD		3F1			Moment	Shear	
SECTION C - NORTH	20-21	277	1	6686.03	560.42	439.38	82.96	333.65	59.1	1.26	11.19	4.68	
		1742	2	6136.19	521.37	773.12	80.91	574.49	59.1	1.26	5.45	4.30	
		1743	3	6693.95	477.73	1352.08	77.18	1027.54	59.1	1.26	2.93	3.90	
		1389	3	6693.95	477.73	1351.97	26.72	1027.45	30.1	1.26	2.93	8.98	
		1744	4	5503.98	475.44	1062.46	31.15	871.61	30.1	1.26	2.89	8.82	
		1388	4	5503.98	475.44	715.48	125.37	871.74	66.11	1.26	3.20	2.89	
		1745	5	6136.19	521.37	968.86	128.78	590.4	66.11	1.26	5.04	3.27	
		1746	6	6751.47	565.01	1612.41	130.71	497.34	66.11	1.26	5.71	3.65	
	1747	7	7330.82	605.21	2363.94	132.96	720.7	66.11	1.26	3.61	3.99		
	21-22	278	1	6527.93	605.21	2316.76	118.96	761.83	59.28	1.25	2.84	4.68	
		1754	2	6009.84	566.16	1646.12	116.88	446.23	59.28	1.25	5.34	4.30	
		1755	3	5006.36	530.56	955.8	114.76	398.21	59.28	1.25	5.82	3.96	
		1756	4	4489.63	485.77	640.32	112.74	780.28	59.28	1.25	2.88	3.52	
		1391	4	4489.63	485.77	774.55	19.36	780.23	22.68	1.25	2.75	12.50	
		1757	5	5234.00	476.59	1029.61	17.08	824.04	22.68	1.25	2.91	12.33	
		1390	5	5234.00	476.59	1029.81	94.49	824.16	59.02	1.25	2.91	3.69	
		1758	6	4832.44	515.63	511.76	96.47	499.79	59.02	1.25	5.13	4.07	
	1759	7	5345.51	559.27	920.54	99.23	389.88	59.02	1.25	6.55	4.49		
	1760	8	5929.23	607.50	1488.64	101.12	719.3	59.02	1.25	3.42	4.96		
	22-23	279	1	5386.63	591.43	1355.71	79.71	546.82	50.53	1.29	3.95	5.76	
		1767	2	4784.97	538.60	949.34	78.09	486.64	50.53	1.29	4.35	5.16	
		1768	3	4204.26	485.77	586.49	76.66	776.59	50.53	1.29	2.64	4.56	
		1392	3	4204.26	485.77	469.71	22.33	776.66	38.1	1.29	2.76	7.15	
		1769	4	4733.64	534.01	232.12	23.7	338.26	38.1	1.29	7.81	7.88	
	SECTION C - SOUTH	20-21	1770	5	5346.75	587.98	128.57	25.85	166.86	38.1	1.29	18.51	8.68
			300	1	5825.45	545.49	525.56	88.23	340.04	60.35	1.25	9.31	4.39
			1748	2	5310.32	505.30	1229	84.82	912.26	60.35	1.25	2.50	4.03
			1749	3	6873.69	470.84	1622.84	81.01	1209.73	60.35	1.25	2.42	3.73
1410			3	6873.69	470.84	1622.74	17.51	1209.65	37.09	1.25	2.42	7.43	
1750			4	7006.01	478.88	1446.64	22.95	1029.67	37.09	1.25	3.06	7.45	
1409			4	7006.01	478.88	1200.92	109.29	1029.65	80.21	1.25	3.25	2.58	
1751			5	5573.72	525.97	652.16	112.18	623.87	80.21	1.25	4.66	2.92	
1752		6	6110.17	567.31	820.59	113.93	476.42	80.21	1.25	6.51	3.22		
1753		7	6613.18	605.21	1479.45	116.02	916.03	80.21	1.25	3.15	3.49		
21-22		395	1	5746.69	588.50	1273.52	50.22	771.89	49.14	1.28	3.19	6.40	
		1761	2	5154.82	543.19	951.15	48.05	652.32	49.14	1.28	3.61	5.88	
		1762	3	6150.56	500.70	714.93	46.45	561.21	49.14	1.28	5.59	5.38	
		1763	3	6150.56	500.70	392.01	43.65	899.29	49.14	1.28	3.77	5.43	
		1427	4	5741.52	471.99	438.41	42.11	899.33	50.43	1.28	3.46	4.97	
		1764	5	6150.56	500.70	749.94	44.9	528.01	50.43	1.28	5.89	5.27	
		1765	6	5168.38	544.34	985.42	46.56	610.21	50.43	1.28	3.83	5.77	
	1766	7	5760.67	593.72	1220.57	48.2	689.43	50.43	1.28	3.64	6.33		
22-23	396	1	6597.77	559.39	1562.57	115.44	920.94	73.66	1.25	3.05	3.42		
	1771	2	5959.87	555.83	904.84	113.35	512.38	73.66	1.25	5.75	3.41		
	1772	3	5368.57	509.89	908.57	110.36	737.75	73.66	1.25	3.49	3.06		
	1773	4	6930.34	474.29	1317.77	107.6	1018.26	73.66	1.25	3.15	2.79		
	1429	4	6930.34	474.29	1496.17	17.4	1018.15	32	1.25	3.01	8.69		
	1774	5	7043.90	481.18	1606.18	11.95	1194.91	32	1.25	2.55	8.95		
	1428	5	7043.90	481.18	1606.38	85.45	1195.03	61.7	1.25	2.55	3.69		
	1775	6	5677.03	534.01	947.03	88.29	708.84	61.7	1.25	3.86	4.18		
1776	7	6170.56	571.90	241.23	89.78	210.76	61.7	1.25	17.10	4.54			
1930	8	6613.18	605.21	628.52	91.78	388.56	61.7	1.25	9.18	4.85			



Lakefront Trestle - 3F1 Girder Ratings



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Girder Rating - As Built

SECTION	Girders	Girder Spreadsheet	CAPACITIES		SERVICE LOAD					RATING FACTORS - 3F1			
					DEAD LOAD		3F1			IMPACT	Moment	Shear	
SECTION D - NORTH	23-24	280	1	4044.23	586.83	132.62	26.57	99.96	19.54	1.30	22.92	16.72	
		1777	2	3618.93	539.75	429.74	29.14	308.44	19.54	1.3	5.87	15.20	
		1778	3	4002.01	582.24	613.97	30.67	428.83	19.54	1.3	4.42	16.42	
	24-25	281	1	4542.86	592.57	669.99	67.79	476.91	46.88	1.28	4.63	6.47	
		1780	2	4055.65	543.19	254.78	66.09	186.59	46.88	1.28	12.00	5.86	
		1781	3	3640.33	499.55	592.93	64.82	431.08	46.88	1.28	4.00	5.32	
		1782	4	5915.47	470.84	1052.6	62.7	782.93	46.88	1.28	3.49	4.99	
		1393	4	5915.47	470.84	1052.61	66.5	782.85	49.38	1.28	3.49	4.68	
		1783	5	3640.33	499.55	564.78	68.45	412.49	49.38	1.28	4.23	5.00	
		1784	6	4055.65	543.19	286.39	69.72	204.72	49.38	1.28	10.81	5.51	
	25-26	282	1	3238.68	383.03	699.34	54.97	502.66	38.5	1.30	2.74	4.79	
		1792	2	2202.42	427.33	235.3	53.09	172.01	38.5	1.3	6.52	5.51	
	SECTION D - SOUTH	23-24	301	1	2244.34	413.62	167.73	40.96	135.04	32.66	1.30	8.88	6.53
			1779	2	3262.62	325.45	658.3	43.51	514.37	32.66	1.3	2.77	4.87
24-25		302	1	4542.86	592.57	708.01	61.4	556.08	46.58	1.28	3.91	6.62	
		1786	2	4055.65	543.19	332.7	59.71	267.71	46.58	1.28	8.13	6.01	
		1787	3	3565.38	491.52	570.99	58.44	462.4	46.58	1.28	3.67	5.36	
		1788	4	4184.44	468.55	846.39	55.7	695.83	46.58	1.28	2.66	5.11	
		1411	4	4184.44	468.55	846.35	52.42	695.69	43.9	1.28	2.66	5.48	
		1789	5	3565.38	491.52	588.43	55.16	476.6	43.9	1.28	3.53	5.75	
		1790	6	4055.65	543.19	263.91	56.43	211.22	43.9	1.28	10.56	6.43	
25-26		1791	7	4554.41	572.07	620.12	58.13	484.26	43.9	1.28	4.65	6.80	
		303	1	3278.60	319.42	537.85	24.79	427.86	17.64	1.30	3.57	9.63	
		1793	2	2986.18	390.38	386.25	23.41	316.88	17.64	1.3	4.64	12.07	
SECTION E - NORTH		26-27	1794	3	2202.42	424.93	100.85	20.64	88.24	17.64	1.3	13.89	13.35
			283	1	6520.92	598.32	296.16	67.61	179.5	39.49	1.27	20.70	7.83
	1795		2	5944.89	554.68	400.8	65.39	239.53	39.49	1.27	13.72	7.20	
	1796		3	5383.16	511.04	920.45	63.8	568.66	39.49	1.27	4.46	6.57	
	1797		4	7062.86	482.33	1188.18	60.92	745.14	39.49	1.27	4.49	6.18	
	1798		5	7728.59	469.70	1616.11	58.91	1041.33	39.49	1.27	3.27	6.03	
	1394		5	7728.59	469.70	1615.96	73.11	1041.28	52.2	1.27	3.27	4.35	
	1799		6	7024.95	480.03	1081.5	75.14	649.78	52.2	1.27	5.24	4.44	
	1800		7	5368.57	509.89	745.74	78.19	413.34	52.2	1.27	6.45	4.74	
	1801		8	5944.89	554.68	324.36	79.95	307.11	52.2	1.27	10.89	5.23	
	27-28	1802	9	6520.92	598.32	824.24	82.19	628.96	52.2	1.27	5.25	5.70	
		284	1	5161.84	571.90	634.42	5.16	533.08	20.8	1.30	4.81	16.08	
		1809	2	4429.00	506.44	608.35	3.23	403.83	20.8	1.3	5.33	14.29	
		1811	3	4105.40	476.59	597.81	2.04	320.63	20.8	1.3	6.14	13.48	
1813		4	4429.00	506.44	601.69	2.55	385.71	20.8	1.3	5.59	14.31		
1815		5	5148.70	570.75	623.13	4.45	506.21	20.8	1.3	5.07	16.07		
28-29	285	1	6520.92	598.32	810.34	81.06	605.8	50.25	1.27	5.47	5.94		
	1817	2	5944.89	554.68	312.4	78.8	292.74	50.25	1.27	11.46	5.45		
	1818	3	5368.57	509.89	744.1	77.03	402.44	50.25	1.27	6.62	4.94		
	1819	4	7024.95	480.03	1068.16	73.98	625.58	50.25	1.27	5.46	4.63		
	1820	5	7728.59	469.70	1593.9	71.98	1002.28	50.25	1.27	3.42	4.53		
	1395	5	7728.59	469.70	1594.08	57.77	1002.33	37.71	1.27	3.42	6.34		
	1821	6	7062.86	482.33	1174.69	59.81	719.47	37.71	1.27	4.66	6.50		
	1822	7	5383.16	511.04	906.64	62.69	547.53	37.71	1.27	4.65	6.90		
	1823	8	5944.89	554.68	396.25	64.29	233.29	37.71	1.27	14.10	7.57		
1824	9	6520.92	598.32	274.33	66.42	158.51	37.71	1.27	23.55	8.22			

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Girder Rating - As Built

Girders	Girder Spreadsheet	CAPACITIES		SERVICE LOAD						RATING FACTORS - 3F1		
				DEAD LOAD		3F1		IMPACT	Moment	Shear		
SECTION E - SOUTH	26-27	304	1	6536.27	599.46	273.65	59.1	197.86	39.46	1.26	19.07	8.09
		1803	2	5959.87	555.83	370.34	56.82	247.99	39.46	1.26	13.49	7.46
		1804	3	5383.16	511.04	894.93	55.04	636	39.46	1.26	4.05	6.80
		1805	4	6930.34	474.29	1481.01	51.65	1108.23	39.46	1.26	2.76	6.30
		1412	4	6930.34	474.29	1481.02	70.83	1108.27	57.44	1.26	2.76	4.06
		1806	5	5368.57	509.89	663.26	73.88	419.18	57.44	1.26	6.56	4.40
		1807	6	5944.89	554.68	347.32	75.64	373.78	57.44	1.26	8.97	4.85
	1808	7	6520.92	598.32	823.18	77.89	729.84	57.44	1.26	4.56	5.28	
	27-28	305	1	5161.84	571.90	629.19	4.08	617.6	24.25	1.30	4.16	13.83
		1810	2	4429.00	506.44	609.82	2.15	468.37	24.25	1.3	4.59	12.29
		1812	3	4105.40	476.59	612.25	2.44	381.72	24.25	1.3	5.13	11.55
		1814	4	4429.00	506.44	624.4	3.63	478.73	24.25	1.3	4.47	12.24
	28-29	1816	5	5148.70	570.75	652.45	5.53	627.11	24.25	1.3	4.06	13.75
		306	1	6520.92	598.32	838.93	78.95	744.92	58.67	1.26	4.45	5.16
		1825	2	5944.89	554.68	354.13	76.69	379.42	58.67	1.26	8.82	4.73
		1826	3	5368.57	509.89	673.16	74.92	432.17	58.67	1.26	6.35	4.29
		1827	4	6930.34	474.29	1499.19	71.87	1132.54	58.67	1.26	2.69	3.96
		1413	4	6930.34	474.29	1499.26	52.21	1132.53	40.02	1.26	2.69	6.20
		1828	5	5368.57	509.89	904.98	55.6	652.28	40.02	1.26	3.92	6.68
	1829	6	5944.89	554.68	374.9	57.37	258.72	40.02	1.26	12.88	7.32	
	1830	7	6520.92	598.32	281.26	59.69	196.92	40.02	1.26	19.08	7.94	
SECTION F - NORTH	29-30	286	1	5161.84	571.90	148.17	25.18	87.63	14.33	1.30	33.55	22.26
		1831	2	4429.00	506.44	264.51	26.52	152.11	14.33	1.3	15.89	19.49
		1832	3	4068.50	473.14	593.72	29.91	319.3	14.33	1.3	6.11	17.93
		1833	4	4441.58	507.59	729.79	31.24	383.06	14.33	1.3	5.40	19.28
		1834	5	5174.98	573.05	935.53	33.23	474.53	14.33	1.3	4.94	21.88
	30-31	287	1	5493.40	600.61	1063.78	91.7	552.3	46.16	1.26	4.54	6.37
		1839	2	4888.10	547.79	504.31	89.75	267.66	46.16	1.26	9.65	5.70
		1841	3	4366.25	500.70	957.73	87.17	506.22	46.16	1.26	3.76	5.12
		1843	4	5293.91	481.18	1097.96	84.7	582.9	46.16	1.26	4.05	4.91
		1845	5	8936.33	470.84	1890.67	84.11	1032.4	46.16	1.26	3.83	4.78
		1396	5	8936.33	470.84	1890.71	84.49	1032.69	46.02	1.26	3.83	4.79
		1847	6	5293.91	481.18	1092.63	85.14	583.51	46.02	1.26	4.05	4.92
		1849	7	4366.25	500.70	936.68	87.61	498.88	46.02	1.26	3.85	5.13
		1851	8	4901.04	548.94	516.72	90.14	264.57	46.02	1.26	9.76	5.73
	1853	9	5506.79	601.76	1076.8	92.09	547.49	46.02	1.26	4.58	6.39	
	31-32	288	1	5201.30	575.35	911.91	31.86	467.9	13.71	1.30	5.08	23.04
		1855	2	4466.77	509.89	721.35	29.94	383.33	13.71	1.3	5.45	20.33
		1856	3	4093.09	475.44	585.64	28.55	319.7	13.71	1.3	6.17	18.92
		1857	4	4656.95	527.12	247.33	24.86	146.01	13.71	1.3	17.57	21.36
		1858	5	5641.25	613.25	130.53	23.4	79.64	13.71	1.3	40.65	25.15

Lakefront Trestle - 3F1 Girder Ratings



Made By: CTG  
Checked By: DMP

Date: 4/10/2012  
Date: 4/13/2012

Job No.: P402110046  
Sheet No.: \_\_\_\_\_

Girder Rating - As Built

Girders	Girder Spreadsheet	CAPACITIES		SERVICE LOAD					RATING FACTORS - 3F1			
				DEAD LOAD		3F1		IMPACT	Moment	Shear		
SECTION F - SOUTH	29-30	307	1	5188.13	574.20	126.56	20.23	96.23	14.6	1.30	30.89	22.21
		1835	2	4441.58	507.59	231.44	21.72	169.25	14.6	1.3	14.48	19.43
		1836	3	3921.76	459.36	529.66	25.37	354.21	14.6	1.3	5.40	17.28
		1837	4	4466.77	509.89	663.89	26.9	429.21	14.6	1.3	4.97	19.25
		1838	5	5214.47	576.50	835.5	28.82	519.16	14.6	1.3	4.71	21.85
	30-31	308	1	5493.40	600.61	975.18	85.61	617.21	52.72	1.26	4.18	5.67
		1840	2	4888.10	547.79	453.24	83.65	292.37	52.72	1.26	8.98	5.08
		1842	3	4366.25	500.70	906.57	81.07	591.95	52.72	1.26	3.29	4.58
		1844	4	5293.91	481.18	1036.68	78.6	679.55	52.72	1.26	3.55	4.39
		1846	5	8936.33	470.84	1770.08	78.01	1193	52.72	1.26	3.40	4.28
		1414	5	8936.33	470.84	1770.07	79.09	1192.63	53.24	1.26	3.40	4.22
		1848	6	5293.91	481.18	1024.67	79.74	672.98	53.24	1.26	3.59	4.33
		1850	7	4366.25	500.70	878.63	82.21	575.07	53.24	1.26	3.42	4.52
		1852	8	4901.04	548.94	485.23	84.74	308.14	53.24	1.26	8.46	5.03
	1854	9	5506.79	601.76	1012.14	86.69	635.45	53.24	1.26	4.03	5.61	
	31-32	309	1	5214.47	576.50	863.98	30.22	539.86	15.63	1.30	4.48	20.34
		1859	2	4479.38	511.04	683.58	28.29	443.49	15.63	1.3	4.79	17.95
		1860	3	4130.06	478.88	549.19	26.84	367.3	15.63	1.3	5.50	16.81
		1861	4	4644.20	525.97	232.69	23.14	169.35	15.63	1.3	15.17	18.77
		1862	5	5654.75	614.39	126.19	21.71	95.12	15.63	1.3	34.16	22.19
SECTION G - NORTH	32-33	289	1	6028.50	647.53	588.92	107.97	318.76	56.42	1.24	10.24	5.58
		1863	2	6094.81	592.57	1359.13	104.11	758.47	56.42	1.24	3.54	5.03
		1864	3	7824.06	568.46	1642.63	101.4	916.36	56.42	1.24	3.85	4.80
		1865	4	10777.45	543.19	2439.94	100.18	1374.14	56.42	1.24	3.43	4.54
		1398	4	10777.45	543.19	2439.82	33.77	1374.09	38.23	1.24	3.43	8.10
		1866	5	10357.76	523.67	2285.11	40.52	1206.7	38.23	1.24	3.80	7.64
		1867	6	7331.16	537.45	1854.56	46.28	883.57	38.23	1.24	3.45	7.74
		1397	6	7331.16	537.45	1272.01	157.51	883.36	74.64	1.24	3.99	2.77
		1868	7	5847.41	573.05	918.67	159.78	718.41	74.64	1.24	4.02	3.04
	1869	8	6285.93	607.50	1222.17	162.14	356.5	74.64	1.24	8.17	3.30	
	1870	9	7559.36	645.03	2619.58	165.47	936.13	74.64	1.24	2.75	3.57	
	33-34	290	1	7464.66	635.59	2404.65	123.71	795.76	49.43	1.29	3.25	5.73
		1877	2	6886.06	605.21	1675.65	121.4	663.3	49.43	1.29	4.23	5.40
		1878	3	5775.19	567.31	1328.23	120.31	599.28	49.43	1.29	4.03	4.96
		1879	4	5347.06	532.86	538.72	118.04	759.7	49.43	1.29	3.65	4.58
1399		4	5347.06	532.86	478.55	19.53	759.61	33.82	1.29	3.71	8.95	
1880		5	5905.36	577.65	317.35	22.79	457.24	33.82	1.29	7.16	9.66	
1881	6	6028.50	644.90	116.38	24.84	135.95	33.82	1.29	25.78	10.80		

Lakefront Trestle - 3F1 Girder Ratings



Made By: CTG  
Checked By: DMP

Date: 4/10/2012  
Date: 4/13/2012

Job No.: P402110046  
Sheet No.: \_\_\_\_\_

Girder Rating - As Built

Girders	Girder Spreadsheet	CAPACITIES		SERVICE LOAD						RATING FACTORS - 3F1		
				DEAD LOAD		3F1		IMPACT	Moment	Shear		
SECTION G - SOUTH	32-33	1416	1	5745.07	612.76	115.86	29.56	116.08	34.46	1.27	29.19	10.09
		1871	2	5929.23	607.50	248.66	27.4	288.32	34.46	1.27	11.78	10.05
		1872	3	5359.21	560.42	489.78	25.73	632.9	34.46	1.27	4.52	9.26
		1873	4	4992.92	529.41	673.64	22.49	933.1	34.46	1.27	2.67	8.79
		1415	4	4992.92	529.41	673.72	74.51	933.12	50.55	1.27	2.67	5.18
		1874	5	5359.21	560.42	742.02	77.75	480.54	50.55	1.27	5.54	5.50
		1875	6	5929.23	607.50	1125.82	79.38	459	50.55	1.27	5.89	6.04
		1876	7	5745.07	632.30	1604.68	81.43	572.92	50.55	1.27	3.87	6.31
	33-34	311	1	6486.10	642.63	1670.75	106.9	588.51	60.32	1.25	4.51	5.14
		1882	2	7289.94	615.54	1052.38	104.51	471.11	60.32	1.25	7.74	4.89
		1883	3	7787.30	566.16	793.98	101.59	916.81	60.32	1.25	4.53	4.43
		1418	4	7186.50	528.26	1381.84	34.74	1005.62	30.47	1.25	3.30	9.76
		1884	5	8393.98	542.04	1508.27	26.54	1142.22	30.47	1.25	3.47	10.25
		1417	5	8393.98	542.04	1508.37	69.5	1142.16	54.19	1.25	3.47	5.13
		1885	6	7879.28	571.90	1182.33	72.18	883.71	54.19	1.25	4.42	5.43
		1886	7	6174.38	613.25	745.64	74.73	549.68	54.19	1.25	5.83	5.86
1887	8	5867.25	653.13	240.53	76.78	172.7	54.19	1.25	19.79	6.28		
SECTION H - NORTH	34-35	291	1	7103.62	801.01	285.71	27.02	526.53	45.66	1.27	7.74	10.16
		1888	2	6424.30	740.72	495.71	22.53	991.68	45.66	1.27	3.53	9.44
		1401	2	6424.30	740.72	857.78	68.47	992.06	33.71	1.27	3.24	11.71
		1400	3	6761.23	770.86	1868	183.46	769.74	71.24	1.27	3.41	4.53
		1889	4	9448.78	805.32	2702.42	185.64	860.66	71.24	1.27	4.18	4.80
		1890	5	12954.14	872.78	4762.6	192.09	1127.84	71.24	1.27	3.63	5.30
	35-36	292	1	13024.07	911.54	5078.99	257.6	1326.33	88.88	1.20	3.10	4.16
		1896	2	11645.15	879.96	3501.71	253.91	889.8	88.88	1.2	5.11	3.97
		1897	3	10171.45	855.56	2254.66	251.22	585.71	88.88	1.2	7.92	3.82
		1898	4	7202.44	809.62	1207.12	249.15	685.07	88.88	1.2	5.27	3.50
		1406	4	7202.44	809.62	1366.74	137.85	858.85	67.62	1.2	4.05	5.98
		1899	5	8941.87	769.43	2030.29	133.89	1145.57	67.62	1.2	3.53	5.64
		1900	6	10553.47	753.64	2678.31	131.51	1459.38	67.62	1.2	3.11	5.52
		1405	6	10553.47	753.64	2755.77	60.03	1459.89	44.31	1.2	3.06	9.77
		1901	7	12101.89	736.41	3391.02	59.31	1511.9	44.31	1.2	3.26	9.54
		1902	8	13384.98	726.36	3799.41	52.18	1822.85	44.31	1.2	2.97	9.53
		1404	8	13384.98	726.36	3799.36	50.65	1822.86	51.51	1.2	2.97	8.22
		1903	9	12420.03	753.64	3371.77	57.65	1440.55	51.51	1.2	3.58	8.45
		1403	9	12420.03	753.64	2769.5	140.25	1429.74	71.02	1.2	3.95	5.16
		1904	10	10951.11	778.04	1549.24	141.89	846.13	71.02	1.2	6.77	5.36
		1905	11	9123.47	782.35	1131.31	143.32	692.72	71.02	1.2	7.08	5.38
		1906	12	7268.57	815.36	707.69	145.4	632.61	71.02	1.2	6.43	5.65
		1402	12	7268.57	815.36	1585.78	216.16	595.34	87.42	1.2	5.61	3.92
		1907	13	10129.75	852.69	2365.51	217.93	795.51	87.42	1.2	5.68	4.18
		1908	14	13029.12	877.09	3486.88	220.96	1119.14	87.42	1.2	4.87	4.33
	1909	15	16291.51	910.11	4636.1	224.53	1475.75	87.42	1.2	4.46	4.53	
	36-37	293	1	12954.14	872.78	4265.18	162.99	1318.58	49.9	1.30	3.32	7.84
		1924	2	9346.78	798.14	2701.46	157.21	989.73	49.9	1.3	3.49	7.04
		1925	3	6376.61	736.41	1567.29	153.7	744.09	49.9	1.3	3.45	6.36
		1407	3	6376.61	736.41	969.33	48.7	737.89	33.96	1.3	4.10	11.73

Lakefront Trestle - 3F1 Girder Ratings



Made By: CTG  
Checked By: DMP

Date: 4/10/2012  
Date: 4/13/2012

Job No.: P402110046  
Sheet No.: \_\_\_\_\_

Girder Rating - As Built

SECTION H - SOUTH	Girders	Girder Spreadsheet	CAPACITIES		SERVICE LOAD					RATING FACTORS - 3F1		
					DEAD LOAD		3F1			IMPACT	Moment	Shear
34-35	312	1	7103.62	801.01	231.94	38.51	204.68	32.91	1.30	19.66	13.50	
	1891	2	6712.76	766.56	436.02	40.48	374.75	32.91	1.3	9.70	12.84	
	1892	3	6344.89	733.54	874.34	44.36	714.84	32.91	1.3	4.31	12.15	
	1419	3	6344.89	733.54	1424.04	138.14	723.71	50.1	1.3	3.67	6.54	
	1893	4	8982.14	772.30	2579.89	142.07	989.3	50.1	1.3	3.37	6.94	
	1894	5	12161.35	826.85	3080.68	144.11	1101.97	50.1	1.3	4.38	7.55	
	1895	6	13104.20	881.40	3841.82	147.2	1270.19	50.1	1.3	3.78	8.15	
35-36	313	1	16408.63	915.85	4242.91	202.17	1453	80.89	1.20	4.81	5.18	
	1910	2	13154.32	884.27	2794.48	197.13	978.33	80.89	1.2	6.24	4.98	
	1911	3	10150.59	854.12	1598.14	193.5	621.76	80.89	1.2	8.32	4.78	
	1912	4	7268.57	815.36	732.41	191.28	544.52	80.89	1.2	7.44	4.49	
	1424	4	7268.57	815.36	1367.97	129.88	823.11	67.25	1.2	4.28	6.16	
	1913	5	9224.79	789.53	1710.46	125.23	982.51	67.25	1.2	4.57	5.97	
	1914	6	10740.15	765.12	2140.84	123.91	1208.09	67.25	1.2	4.22	5.76	
	1915	7	12525.63	739.28	2385.59	121.98	1338.08	67.25	1.2	4.51	5.54	
	1423	7	12525.63	739.28	3073.25	50.04	1493.02	48.53	1.2	3.66	8.91	
	1916	8	13755.38	726.36	3261.45	40.26	1698.4	48.53	1.2	3.59	8.90	
	1422	8	13755.38	726.36	3261.59	45.28	1698.5	41.95	1.2	3.59	10.20	
	1917	9	12471.41	736.41	2754.1	49.67	1398.08	41.95	1.2	4.08	10.27	
	1918	10	10553.47	753.64	2429.21	50.62	1425.27	41.95	1.2	3.33	10.51	
	1421	10	10553.47	753.64	2342.8	118.23	1425.31	66.2	1.2	3.38	5.81	
	1919	11	8941.87	769.43	1816.62	120.61	1134.37	66.2	1.2	3.72	5.93	
1920	12	7185.94	808.19	1219.82	124.76	834.43	66.2	1.2	4.30	6.26		
1420	12	7185.94	808.19	1106.1	222.91	667.35	88.41	1.2	5.52	3.76		
1921	13	10129.75	852.69	2125.77	225.15	580.88	88.41	1.2	8.13	4.06		
1922	14	13079.16	879.96	3276.39	228.16	900.83	88.41	1.2	6.28	4.23		
1923	15	16320.77	911.54	4629.96	232.23	1309.02	88.41	1.2	5.04	4.42		
36-37	314	1	13154.32	884.27	4288.01	169.36	1084.78	70.07	1.27	4.23	5.74	
	1926	2	9818.55	831.15	2413.24	162.66	842.64	70.07	1.27	4.80	5.36	
	1927	3	6842.26	778.04	1671.4	160.41	766.41	70.07	1.27	3.69	4.92	
	1426	3	6842.26	778.04	860.58	64.95	767	34.37	1.27	4.52	12.22	
	1928	4	6281.57	727.80	418.08	60.92	1013.01	34.37	1.27	3.43	11.43	
	1425	4	6281.57	727.80	418.33	23.32	1013.05	46.65	1.27	3.43	9.06	

Lakefront Trestle - 4F1 Girder Ratings



Made By: CTG  
Checked By: DMP

Date: 4/10/2012  
Date: 4/13/2012

Job No.: P402110046  
Sheet No.: \_\_\_\_\_

Girder Rating - As Built

Girders			Girder Spreadsheet Section	CAPACITIES		SERVICE LOAD				IMPACT	RATING FACTORS - 4F1	
Bents	STAAD Beam	Moment (kip-ft)		Shear (kips)	DEAD LOAD		4F1		Moment		Shear	
					M <sub>DL</sub> (k-ft)	V <sub>DL</sub> (k)	M <sub>LL</sub> (k-ft)	V <sub>LL</sub> (k)				Oper.
SECTION A - NORTH	14-15	271	End	4694.37	603.39	849.89	68.49	583.23	44.11	1.27	3.73	7.06
		1716	Mid	6697.01	603.39	1331.27	59.68	954.19	44.11	1.27	3.15	7.22
		415	Mid	6697.01	603.39	1331.32	68.52	954.53	52.55	1.27	3.15	5.93
		1717	End	4694.37	603.39	963.26	78.6	665.52	52.55	1.27	3.13	5.78
	15-16	272	n/a	2559.85	487.18	306.82	4.83	312.73	14.51	1.30	4.09	19.61
	16-17	273	End	4694.37	603.39	803.7	64.59	646.7	52	1.28	3.39	6.00
		1720	Mid	5795.99	603.39	1095.64	54.51	932.72	52	1.28	2.82	6.15
		479	Mid	5795.99	603.39	1095.65	50.5	932.71	44.2	1.28	2.82	7.31
1722		End	4694.37	603.39	825.74	60.4	689.62	44.2	1.28	3.16	7.14	
SECTION A - SOUTH	14-15	294	End	4694.37	603.39	749.16	61.14	549.19	41.65	1.27	4.10	7.62
		1718	Mid	6697.01	603.39	1173.31	52.37	903.22	41.65	1.27	3.47	7.78
		416	Mid	6697.01	603.39	1173.34	59.83	903.52	49.68	1.27	3.47	6.41
		1719	End	4694.37	603.39	853.08	69.91	630.3	49.68	1.27	3.45	6.25
	15-16	295	n/a	2559.85	487.18	268.6	3.75	310.7	14.43	1.30	4.21	19.78
	16-17	296	End	4694.37	603.39	734.81	60.14	622.71	50.35	1.27	3.64	6.32
		1721	Mid	5795.99	603.39	1002.28	50.06	899.61	50.35	1.27	3.03	6.48
		480	Mid	5795.99	603.39	1002.28	43.71	899.61	41.02	1.27	3.03	8.07
1723		End	4694.37	603.39	769.69	53.98	673.98	41.02	1.27	3.32	7.87	
SECTION B - NORTH	17-18	274	1	2233.54	338.78	125.4	13.74	102.18	10.3	1.30	11.99	18.44
		1724	2	2327.59	350.26	225.52	15.28	173.25	10.3	1.3	6.95	18.98
		1725	3	2684.18	392.75	339.38	16.93	246.08	10.3	1.3	5.39	21.30
		1726	4	3095.15	439.84	412.53	17.94	289.3	10.3	1.3	5.23	23.93
	18-19	275	1	2973.15	426.06	583.53	71	436.53	51.68	1.27	3.07	3.91
		1730	2	6232.06	419.17	1327.98	67.09	1036.46	51.68	1.27	2.63	3.89
		1387	2	6232.06	419.17	1328.2	69.28	1036.58	55.86	1.27	2.63	3.57
		1732	3	6909.10	460.51	1095.89	73.12	847.25	55.86	1.27	3.92	3.96
		1734	4	3651.07	500.70	487.8	74.85	370.2	55.86	1.27	4.94	4.37
		1736	5	4089.05	546.64	759.2	77.43	555.36	55.86	1.27	3.38	4.84
	19-20	276	1	3835.28	520.23	573.86	24.6	428.66	15.83	1.30	4.26	18.25
		1738	2	3322.54	465.10	453.84	23.31	349.34	15.83	1.3	4.63	16.25
		1739	3	3857.14	522.52	118.98	19.44	101.25	15.83	1.3	21.64	18.59
	SECTION B - SOUTH	17-18	297	1	2205.51	335.33	111.34	12.33	110.9	11.19	1.30	11.00
1727			2	2346.52	352.56	209.68	14	194.49	11.19	1.3	6.31	17.68
1728			3	2713.69	396.20	318.59	15.71	276.52	11.19	1.3	4.92	19.87
1729			4	3074.72	437.54	386.79	16.73	323.57	11.19	1.3	4.70	21.99
18-19		298	1	2973.15	426.06	540.98	66.39	480.89	57.43	1.27	2.86	3.58
		1731	2	6232.06	419.17	1239.16	62.48	1155.99	57.43	1.27	2.42	3.56
		1408	2	6232.06	419.17	1239.17	63.61	1156.42	61.49	1.27	2.42	3.31
		1733	3	6909.10	460.51	1026.06	67.45	947.97	61.49	1.27	3.56	3.67
		1735	4	3651.07	500.70	466.37	69.18	422.8	61.49	1.27	4.36	4.05
		1737	5	4089.05	546.64	686.65	71.76	596.08	61.49	1.27	3.25	4.47
19-20		299	1	3879.04	524.82	520.33	21.16	457.68	15.29	1.30	4.14	19.25
		1740	2	3343.45	467.40	419.26	19.88	382.34	15.29	1.3	4.33	17.09
		1741	3	4033.44	540.90	91.35	15.25	96.86	15.29	1.3	23.91	20.17

Lakefront Trestle - 4F1 Girder Ratings



Made By: CTG  
Checked By: DMP

Date: 4/10/2012  
Date: 4/13/2012

Job No.: P402110046  
Sheet No.: \_\_\_\_\_

Girder Rating - As Built

SECTION C - NORTH	SECTION C - SOUTH	Girders	Girder Spreadsheet	CAPACITIES		SERVICE LOAD				IMPACT	RATING FACTORS - 4F1		
						DEAD LOAD		4F1			Moment	Shear	
SECTION C - NORTH	20-21	277	1	6686.03	560.42	439.38	82.96	381.47	67.15	1.26	9.79	4.11	
		1742	2	6136.19	521.37	773.12	80.91	645.81	67.15	1.26	4.85	3.78	
		1743	3	6693.95	477.73	1352.08	77.18	1160.54	67.15	1.26	2.60	3.43	
		1389	3	6693.95	477.73	1351.97	26.72	1160.43	33.39	1.26	2.60	8.10	
		1744	4	5503.98	475.44	1062.46	31.15	1001.47	33.39	1.26	2.51	7.95	
		1388	4	5503.98	475.44	715.48	125.37	1001.4	75.63	1.26	2.79	2.52	
		1745	5	6136.19	521.37	968.86	128.78	673.18	75.63	1.26	4.42	2.86	
		1746	6	6751.47	565.01	1612.41	130.71	570.73	75.63	1.26	4.98	3.19	
	1747	7	7330.82	605.21	2363.94	132.96	834.61	75.63	1.26	3.11	3.49		
	21-22	278	1	6527.93	605.21	2316.76	118.96	873.84	68.19	1.25	2.48	4.07	
		1754	2	6009.84	566.16	1646.12	116.88	516.92	68.19	1.25	4.61	3.74	
		1755	3	5006.36	530.56	955.8	114.76	462.2	68.19	1.25	5.01	3.44	
		1756	4	4489.63	485.77	640.32	112.74	887.57	68.19	1.25	2.54	3.06	
		1391	4	4489.63	485.77	774.55	19.36	887.51	25.03	1.25	2.41	11.32	
		1757	5	5234.00	476.59	1029.61	17.08	939.73	25.03	1.25	2.55	11.17	
		1390	5	5234.00	476.59	1029.81	94.49	939.63	67.74	1.25	2.55	3.21	
		1758	6	4832.44	515.63	511.76	96.47	566.69	67.74	1.25	4.53	3.54	
	1759	7	5345.51	559.27	920.54	99.23	454.57	67.74	1.25	5.62	3.91		
	1760	8	5929.23	607.50	1488.64	101.12	830.96	67.74	1.25	2.96	4.32		
	22-23	279	1	5386.63	591.43	1355.71	79.71	631.47	57.16	1.29	3.42	5.09	
		1767	2	4784.97	538.60	949.34	78.09	561.61	57.16	1.29	3.77	4.56	
		1768	3	4204.26	485.77	586.49	76.66	877.66	57.16	1.29	2.34	4.03	
		1392	3	4204.26	485.77	469.71	22.33	877.74	43.05	1.29	2.44	6.33	
		1769	4	4733.64	534.01	232.12	23.7	382.36	43.05	1.29	6.91	6.97	
	SECTION C - SOUTH	20-21	1770	5	5346.75	587.98	128.57	25.85	188.69	43.05	1.29	16.37	7.68
			300	1	5825.45	545.49	525.56	88.23	394.23	69.18	1.25	8.03	3.83
			1748	2	5310.32	505.30	1229	84.82	1042.72	69.18	1.25	2.19	3.51
			1749	3	6873.69	470.84	1622.84	81.01	1381.45	69.18	1.25	2.12	3.25
1410			3	6873.69	470.84	1622.74	17.51	1381.36	41.19	1.25	2.12	6.69	
1750			4	7006.01	478.88	1446.64	22.95	1168.88	41.19	1.25	2.70	6.71	
1409			4	7006.01	478.88	1200.92	109.29	1169.08	92.37	1.25	2.87	2.24	
1751			5	5573.72	525.97	652.16	112.18	709.8	92.37	1.25	4.10	2.53	
1752		6	6110.17	567.31	820.59	113.93	555.34	92.37	1.25	5.59	2.79		
1753		7	6613.18	605.21	1479.45	116.02	1062.16	92.37	1.25	2.72	3.03		
21-22		395	1	5746.69	588.50	1273.52	50.22	894.67	55.07	1.28	2.75	5.71	
		1761	2	5154.82	543.19	951.15	48.05	755.76	55.07	1.28	3.12	5.25	
		1762	3	6150.56	500.70	714.93	46.45	649.91	55.07	1.28	4.83	4.81	
		1763	3	6150.56	500.70	392.01	43.65	1014.98	55.07	1.28	3.34	4.84	
		1427	4	5741.52	471.99	438.41	42.11	1015.02	57.13	1.28	3.06	4.39	
		1764	5	6150.56	500.70	749.94	44.9	608.61	57.13	1.28	5.11	4.65	
		1765	6	5168.38	544.34	985.42	46.56	703.26	57.13	1.28	3.32	5.09	
		1766	7	5760.67	593.72	1220.57	48.2	794.48	57.13	1.28	3.16	5.59	
22-23		396	1	6597.77	559.39	1562.57	115.44	1062.12	84.71	1.25	2.65	2.97	
		1771	2	5959.87	555.83	904.84	113.35	594.55	84.71	1.25	4.95	2.97	
	1772	3	5368.57	509.89	908.57	110.36	843.68	84.71	1.25	3.05	2.66		
	1773	4	6930.34	474.29	1317.77	107.6	1168.41	84.71	1.25	2.75	2.43		
	1429	4	6930.34	474.29	1496.17	17.4	1168.45	35.81	1.25	2.63	7.76		
	1774	5	7043.90	481.18	1606.18	11.95	1360.94	35.81	1.25	2.24	8.00		
	1428	5	7043.90	481.18	1606.38	85.45	1361.07	70.24	1.25	2.24	3.24		
	1775	6	5677.03	534.01	947.03	88.29	807.62	70.24	1.25	3.39	3.67		
1776	7	6170.56	571.90	241.23	89.78	236.93	70.24	1.25	15.21	3.99			
1930	8	6613.18	605.21	628.52	91.78	449.28	70.24	1.25	7.94	4.26			

Lakefront Trestle - 4F1 Girder Ratings



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Job No.: P402110046  
Sheet No.: \_\_\_\_\_

Girder Rating - As Built

Girders	Girder Spreadsheet	CAPACITIES		SERVICE LOAD						RATING FACTORS - 4F1			
				DEAD LOAD		4F1		IMPACT	Moment	Shear			
SECTION D - NORTH	23-24	280	1	4044.23	586.83	132.62	26.57	114.43	22.37	1.30	20.02	14.61	
		1777	2	3618.93	539.75	429.74	29.14	353.1	22.37	1.3	5.13	13.28	
		1778	3	4002.01	582.24	613.97	30.67	490.92	22.37	1.3	3.86	14.35	
	24-25	281	1	4542.86	592.57	669.99	67.79	545.99	53.62	1.28	4.04	5.65	
		1780	2	4055.65	543.19	254.78	66.09	213.42	53.62	1.28	10.49	5.13	
		1781	3	3640.33	499.55	592.93	64.82	492.52	53.62	1.28	3.50	4.65	
		1782	4	5915.47	470.84	1052.6	62.7	894.94	53.62	1.28	3.05	4.36	
		1393	4	5915.47	470.84	1052.61	66.5	895.05	56.37	1.28	3.05	4.10	
		1783	5	3640.33	499.55	564.78	68.45	472.22	56.37	1.28	3.70	4.38	
		1784	6	4055.65	543.19	286.39	69.72	232.42	56.37	1.28	9.52	4.82	
	25-26	282	1	3238.68	383.03	699.34	54.97	572.57	43.85	1.30	2.41	4.20	
		1792	2	2202.42	427.33	235.3	53.09	195.93	43.85	1.3	5.73	4.84	
	SECTION D - SOUTH	23-24	301	1	2244.34	413.62	167.73	40.96	155.31	37.56	1.30	7.72	5.68
			1779	2	3262.62	325.45	658.3	43.51	591.6	37.56	1.3	2.41	4.24
24-25		302	1	4542.86	592.57	708.01	61.4	639.87	53.55	1.28	3.40	5.75	
		1786	2	4055.65	543.19	332.7	59.71	307.95	53.55	1.28	7.07	5.22	
		1787	3	3565.38	491.52	570.99	58.44	531.02	53.55	1.28	3.19	4.66	
		1788	4	4184.44	468.55	846.39	55.7	799.37	53.55	1.28	2.32	4.45	
		1411	4	4184.44	468.55	846.35	52.42	799.42	50.41	1.28	2.32	4.77	
		1789	5	3565.38	491.52	588.43	55.16	547.85	50.41	1.28	3.07	5.00	
		1790	6	4055.65	543.19	263.91	56.43	241.94	50.41	1.28	9.22	5.60	
25-26		1791	7	4554.41	572.07	620.12	58.13	555.46	50.41	1.28	4.06	5.92	
		303	1	3278.60	319.42	537.85	24.79	490.34	20.22	1.30	3.11	8.40	
		1793	2	2986.18	390.38	386.25	23.41	363.15	20.22	1.3	4.05	10.53	
SECTION E - NORTH		26-27	1794	3	2202.42	424.93	100.85	20.64	101.12	20.22	1.3	12.12	11.65
			283	1	6520.92	598.32	296.16	67.61	203.36	44.76	1.27	18.28	6.91
	1795		2	5944.89	554.68	400.8	65.39	271.51	44.76	1.27	12.10	6.36	
	1796		3	5383.16	511.04	920.45	63.8	644.51	44.76	1.27	3.93	5.79	
	1797		4	7062.86	482.33	1188.18	60.92	844.51	44.76	1.27	3.96	5.46	
	1798		5	7728.59	469.70	1616.11	58.91	1180.18	44.76	1.27	2.89	5.32	
	1394		5	7728.59	469.70	1615.96	73.11	1180.12	59.11	1.27	2.89	3.84	
	1799		6	7024.95	480.03	1081.5	75.14	736.79	59.11	1.27	4.62	3.92	
	1800		7	5368.57	509.89	745.74	78.19	469.04	59.11	1.27	5.68	4.18	
	1801		8	5944.89	554.68	324.36	79.95	346.79	59.11	1.27	9.65	4.62	
	27-28	1802	9	6520.92	598.32	824.24	82.19	711.26	59.11	1.27	4.64	5.04	
		284	1	5161.84	571.90	634.42	5.16	603.07	23.49	1.30	4.26	14.24	
		1809	2	4429.00	506.44	608.35	3.23	457.1	23.49	1.3	4.71	12.65	
		1811	3	4105.40	476.59	597.81	2.04	363.13	23.49	1.3	5.42	11.94	
1813		4	4429.00	506.44	601.69	2.55	437.93	23.49	1.3	4.93	12.67		
28-29	1815	5	5148.70	570.75	623.13	4.45	574.74	23.49	1.3	4.47	14.23		
	285	1	6520.92	598.32	810.34	81.06	687.73	57.04	1.27	4.82	5.23		
	1817	2	5944.89	554.68	312.4	78.8	332.39	57.04	1.27	10.09	4.80		
	1818	3	5368.57	509.89	744.1	77.03	456.67	57.04	1.27	5.84	4.35		
	1819	4	7024.95	480.03	1068.16	73.98	709.95	57.04	1.27	4.81	4.08		
	1820	5	7728.59	469.70	1593.9	71.98	1137.52	57.04	1.27	3.01	3.99		
	1395	5	7728.59	469.70	1594.08	57.77	1137.59	42.8	1.27	3.01	5.58		
	1821	6	7062.86	482.33	1174.69	59.81	816.59	42.8	1.27	4.11	5.73		
	1822	7	5383.16	511.04	906.64	62.69	621.45	42.8	1.27	4.10	6.08		
1823	8	5944.89	554.68	396.25	64.29	264.83	42.8	1.27	12.42	6.67			
1824	9	6520.92	598.32	274.33	66.42	179.8	42.8	1.27	20.77	7.25			



Lakefront Trestle - 4F1 Girder Ratings



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Girder Rating - As Built

Girders		Girder Spreadsheet	CAPACITIES		SERVICE LOAD				IMPACT	RATING FACTORS - 4F1		
					DEAD LOAD		4F1			Moment	Shear	
SECTION E - SOUTH	26-27	304	1	6536.27	599.46	273.65	59.1	226.28	45.23	1.26	16.67	7.05
		1803	2	5959.87	555.83	370.34	56.82	284.23	45.23	1.26	11.77	6.51
		1804	3	5383.16	511.04	894.93	55.04	729.05	45.23	1.26	3.53	5.93
		1805	4	6930.34	474.29	1481.01	51.65	1270.4	45.23	1.26	2.41	5.50
		1412	4	6930.34	474.29	1481.02	70.83	1270.45	65.81	1.26	2.41	3.55
		1806	5	5368.57	509.89	663.26	73.88	480.75	65.81	1.26	5.72	3.84
		1807	6	5944.89	554.68	347.32	75.64	427.53	65.81	1.26	7.84	4.23
	1808	7	6520.92	598.32	823.18	77.89	835.46	65.81	1.26	3.98	4.61	
	27-28	305	1	5161.84	571.90	629.19	4.08	706.54	27.75	1.30	3.64	12.08
		1810	2	4429.00	506.44	609.82	2.15	536.05	27.75	1.3	4.01	10.74
		1812	3	4105.40	476.59	612.25	2.44	436.79	27.75	1.3	4.48	10.09
		1814	4	4429.00	506.44	624.4	3.63	547.82	27.75	1.3	3.91	10.70
	28-29	1816	5	5148.70	570.75	652.45	5.53	717.66	27.75	1.3	3.55	12.02
		306	1	6520.92	598.32	838.93	78.95	852.46	67.13	1.26	3.89	4.51
		1825	2	5944.89	554.68	354.13	76.69	434.27	67.13	1.26	7.71	4.14
		1826	3	5368.57	509.89	673.16	74.92	494.31	67.13	1.26	5.55	3.75
		1827	4	6930.34	474.29	1499.19	71.87	1295.64	67.13	1.26	2.35	3.46
		1413	4	6930.34	474.29	1499.26	52.21	1295.63	45.79	1.26	2.35	5.42
		1828	5	5368.57	509.89	904.98	55.6	746.12	45.79	1.26	3.43	5.83
	1829	6	5944.89	554.68	374.9	57.37	295.82	45.79	1.26	11.26	6.40	
	1830	7	6520.92	598.32	281.26	59.69	225.52	45.79	1.26	16.66	6.94	
SECTION F - NORTH	29-30	286	1	5161.84	571.90	148.17	25.18	101.07	16.53	1.30	29.09	19.30
		1831	2	4429.00	506.44	264.51	26.52	175.45	16.53	1.3	13.78	16.89
		1832	3	4068.50	473.14	593.72	29.91	368.29	16.53	1.3	5.30	15.54
		1833	4	4441.58	507.59	729.79	31.24	441.84	16.53	1.3	4.68	16.72
		1834	5	5174.98	573.05	935.53	33.23	547.33	16.53	1.3	4.28	18.97
	30-31	287	1	5493.40	600.61	1063.78	91.7	637.58	53.32	1.26	3.94	5.51
		1839	2	4888.10	547.79	504.31	89.75	308.76	53.32	1.26	8.37	4.94
		1841	3	4366.25	500.70	957.73	87.17	585.25	53.32	1.26	3.26	4.44
		1843	4	5293.91	481.18	1097.96	84.7	673.85	53.32	1.26	3.50	4.25
		1845	5	8936.33	470.84	1890.67	84.11	1193.13	53.32	1.26	3.31	4.14
		1396	5	8936.33	470.84	1890.71	84.49	1192.98	53.19	1.26	3.32	4.14
		1847	6	5293.91	481.18	1092.63	85.14	673.85	53.19	1.26	3.51	4.25
		1849	7	4366.25	500.70	936.68	87.61	576.04	53.19	1.26	3.34	4.44
		1851	8	4901.04	548.94	516.72	90.14	306.3	53.19	1.26	8.43	4.96
	1853	9	5506.79	601.76	1076.8	92.09	633.28	53.19	1.26	3.96	5.53	
	31-32	288	1	5201.30	575.35	911.91	31.86	541.07	15.86	1.30	4.39	19.92
		1855	2	4466.77	509.89	721.35	29.94	443.28	15.86	1.3	4.71	17.57
		1856	3	4093.09	475.44	585.64	28.55	369.69	15.86	1.3	5.33	16.35
		1857	4	4656.95	527.12	247.33	24.86	168.84	15.86	1.3	15.19	18.46
		1858	5	5641.25	613.25	130.53	23.4	92.09	15.86	1.3	35.16	21.74

Lakefront Trestle - 4F1 Girder Ratings



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Girder Rating - As Built

Girders	Girder Spreadsheet	CAPACITIES		SERVICE LOAD					RATING FACTORS - 4F1			
				DEAD LOAD		4F1		IMPACT	Moment	Shear		
SECTION F - SOUTH	29-30	307	1	5188.13	574.20	126.56	20.23	111.31	16.89	1.30	26.71	19.19
		1835	2	4441.58	507.59	231.44	21.72	195.77	16.89	1.3	12.52	16.79
		1836	3	3921.76	459.36	529.66	25.37	409.72	16.89	1.3	4.67	14.94
		1837	4	4466.77	509.89	663.89	26.9	496.48	16.89	1.3	4.29	16.64
		1838	5	5214.47	576.50	835.5	28.82	600.52	16.89	1.3	4.07	18.88
	30-31	308	1	5493.40	600.61	975.18	85.61	714.24	61	1.26	3.61	4.90
		1840	2	4888.10	547.79	453.24	83.65	338.05	61	1.26	7.76	4.39
		1842	3	4366.25	500.70	906.57	81.07	684.62	61	1.26	2.84	3.96
		1844	4	5293.91	481.18	1036.68	78.6	785.97	61	1.26	3.07	3.79
		1846	5	8936.33	470.84	1770.08	78.01	1380.03	61	1.26	2.94	3.70
		1414	5	8936.33	470.84	1770.07	79.09	1380.02	61.59	1.26	2.94	3.65
		1848	6	5293.91	481.18	1024.67	79.74	778.89	61.59	1.26	3.11	3.74
		1850	7	4366.25	500.70	878.63	82.21	665.63	61.59	1.26	2.96	3.90
		1852	8	4901.04	548.94	485.23	84.74	356.07	61.59	1.26	7.32	4.35
	1854	9	5506.79	601.76	1012.14	86.69	734.7	61.59	1.26	3.48	4.85	
	31-32	309	1	5214.47	576.50	863.98	30.22	624.21	18.07	1.30	3.88	17.59
		1859	2	4479.38	511.04	683.58	28.29	512.78	18.07	1.3	4.14	15.53
		1860	3	4130.06	478.88	549.19	26.84	424.68	18.07	1.3	4.76	14.54
		1861	4	4644.20	525.97	232.69	23.14	195.8	18.07	1.3	13.12	16.24
		1862	5	5654.75	614.39	126.19	21.71	109.98	18.07	1.3	29.54	19.19
SECTION G - NORTH	32-33	289	1	6028.50	647.53	588.92	107.97	364.67	65.08	1.24	8.95	4.83
		1863	2	6094.81	592.57	1359.13	104.11	874.46	65.08	1.24	3.07	4.36
		1864	3	7824.06	568.46	1642.63	101.4	1057.5	65.08	1.24	3.34	4.16
		1865	4	10777.45	543.19	2439.94	100.18	1588.12	65.08	1.24	2.97	3.94
		1398	4	10777.45	543.19	2439.82	33.77	1588.06	42.67	1.24	2.97	7.26
		1866	5	10357.76	523.67	2285.11	40.52	1387.4	42.67	1.24	3.30	6.85
		1867	6	7331.16	537.45	1854.56	46.28	1022.97	42.67	1.24	2.98	6.94
		1397	6	7331.16	537.45	1272.01	157.51	1022.34	86.1	1.24	3.45	2.40
		1868	7	5847.41	573.05	918.67	159.78	828.73	86.1	1.24	3.48	2.63
		1869	8	6285.93	607.50	1222.17	162.14	412.27	86.1	1.24	7.07	2.86
	1870	9	7559.36	645.03	2619.58	165.47	1086.16	86.1	1.24	2.37	3.10	
	33-34	290	1	7464.66	635.59	2404.65	123.71	923.51	56.63	1.29	2.80	5.00
		1877	2	6886.06	605.21	1675.65	121.4	769.59	56.63	1.29	3.65	4.71
		1878	3	5775.19	567.31	1328.23	120.31	695.21	56.63	1.29	3.47	4.33
		1879	4	5347.06	532.86	538.72	118.04	869.57	56.63	1.29	3.19	4.00
		1399	4	5347.06	532.86	478.55	19.53	869.86	38.73	1.29	3.24	7.81
1880		5	5905.36	577.65	317.35	22.79	523.57	38.73	1.29	6.26	8.44	
1881	6	6028.50	644.90	116.38	24.84	155.62	38.73	1.29	22.52	9.43		

Lakefront Trestle - 4F1 Girder Ratings



Made By: CTG Date: 4/10/2012 Job No.: P402110046  
 Checked By: DMP Date: 4/13/2012 Sheet No.:           

**Girder Rating - As Built**

Girders		Girder Spreadsheet	CAPACITIES		SERVICE LOAD				IMPACT	RATING FACTORS - 4F1		
					DEAD LOAD		4F1			Moment	Shear	
SECTION G - SOUTH	32-33	1416	1	5745.07	612.76	115.86	29.56	131.94	39.22	1.27	25.68	8.87
		1871	2	5929.23	607.50	248.66	27.4	327.97	39.22	1.27	10.35	8.83
		1872	3	5359.21	560.42	489.78	25.73	720.16	39.22	1.27	3.97	8.14
		1873	4	4992.92	529.41	673.64	22.49	1061.83	39.22	1.27	2.35	7.72
		1415	4	4992.92	529.41	673.72	74.51	1061.85	57.1	1.27	2.35	4.59
		1874	5	5359.21	560.42	742.02	77.75	550.6	57.1	1.27	4.83	4.87
		1875	6	5929.23	607.50	1125.82	79.38	530.29	57.1	1.27	5.10	5.35
	1876	7	5745.07	632.30	1604.68	81.43	639.43	57.1	1.27	3.47	5.58	
	33-34	311	1	6486.10	642.63	1670.75	106.9	679.83	69.55	1.25	3.91	4.46
		1882	2	7289.94	615.54	1052.38	104.51	529.84	69.55	1.25	6.88	4.24
		1883	3	7787.30	566.16	793.98	101.59	1039.14	69.55	1.25	4.00	3.84
		1418	4	7186.50	528.26	1381.84	34.74	1163.86	34.38	1.25	2.85	8.65
		1884	5	8393.98	542.04	1508.27	26.54	1313.12	34.38	1.25	3.01	9.08
		1417	5	8393.98	542.04	1508.37	69.5	1312.74	62.49	1.25	3.02	4.45
		1885	6	7879.28	571.90	1182.33	72.18	1014.72	62.49	1.25	3.85	4.71
		1886	7	6174.38	613.25	745.64	74.73	629.52	62.49	1.25	5.09	5.08
	1887	8	5867.25	653.13	240.53	76.78	199.9	62.49	1.25	17.10	5.45	
SECTION H - NORTH	34-35	291	1	7103.62	801.01	285.71	27.02	602.34	52.23	1.27	6.77	8.88
		1888	2	6424.30	740.72	495.71	22.53	1134.45	52.23	1.27	3.09	8.25
		1401	2	6424.30	740.72	857.78	68.47	1134.66	38.1	1.27	2.83	10.36
		1400	3	6761.23	770.86	1868	183.46	884.31	81.59	1.27	2.97	3.95
		1889	4	9448.78	805.32	2702.42	185.64	1005.39	81.59	1.27	3.58	4.19
		1890	5	12954.14	872.78	4762.6	192.09	1317.55	81.59	1.27	3.11	4.63
	35-36	292	1	13024.07	911.54	5078.99	257.6	1549.3	102.96	1.20	2.66	3.59
		1896	2	11645.15	879.96	3501.71	253.91	1039	102.96	1.2	4.38	3.42
		1897	3	10171.45	855.56	2254.66	251.22	680.71	102.96	1.2	6.82	3.29
		1898	4	7202.44	809.62	1207.12	249.15	776.02	102.96	1.2	4.65	3.02
		1406	4	7202.44	809.62	1366.74	137.85	995.01	77.02	1.2	3.50	5.25
		1899	5	8941.87	769.43	2030.29	133.89	1320.75	77.02	1.2	3.06	4.96
		1900	6	10553.47	753.64	2678.31	131.51	1684.72	77.02	1.2	2.69	4.85
		1405	6	10553.47	753.64	2755.77	60.03	1685.13	49.89	1.2	2.65	8.68
		1901	7	12101.89	736.41	3391.02	59.31	1755.33	49.89	1.2	2.81	8.47
		1902	8	13384.98	726.36	3799.41	52.18	2091.74	49.89	1.2	2.59	8.46
		1404	8	13384.98	726.36	3799.36	50.65	2091.75	57.93	1.2	2.59	7.31
		1903	9	12420.03	753.64	3371.77	57.65	1673.43	57.93	1.2	3.08	7.51
		1403	9	12420.03	753.64	2769.5	140.25	1653.34	81.91	1.2	3.42	4.47
		1904	10	10951.11	778.04	1549.24	141.89	980.06	81.91	1.2	5.85	4.65
		1905	11	9123.47	782.35	1131.31	143.32	808.08	81.91	1.2	6.07	4.66
	1906	12	7268.57	815.36	707.69	145.4	721.56	81.91	1.2	5.64	4.90	
	1402	12	7268.57	815.36	1585.78	216.16	695.25	101.27	1.2	4.80	3.38	
	1907	13	10129.75	852.69	2365.51	217.93	928.32	101.27	1.2	4.87	3.60	
	1908	14	13029.12	877.09	3486.88	220.96	1308.22	101.27	1.2	4.16	3.73	
	1909	15	16291.51	910.11	4636.1	224.53	1723.2	101.27	1.2	3.82	3.91	
36-37	293	1	12954.14	872.78	4265.18	162.99	1538.97	56.97	1.30	2.85	6.86	
	1924	2	9346.78	798.14	2701.46	157.21	1155.11	56.97	1.3	2.99	6.17	
	1925	3	6376.61	736.41	1567.29	153.7	868.42	56.97	1.3	2.96	5.57	
	1407	3	6376.61	736.41	969.33	48.7	842.06	38.76	1.3	3.60	10.28	

Lakefront Trestle - 4F1 Girder Ratings



Made By: CTG  
 Checked By: DMP

Date: 4/10/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

Girder Rating - As Built

SECTION H - SOUTH	Girders	Girder Spreadsheet	CAPACITIES		SERVICE LOAD				IMPACT	RATING FACTORS - 4F1	
					DEAD LOAD		4F1			Moment	Shear
34-35	312	1	7103.62	801.01	231.94	38.51	231.58	37.24	1.30	17.38	11.93
	1891	2	6712.76	766.56	436.02	40.48	424.01	37.24	1.3	8.58	11.34
	1892	3	6344.89	733.54	874.34	44.36	808.81	37.24	1.3	3.81	10.74
	1419	3	6344.89	733.54	1424.04	138.14	844.57	56.08	1.3	3.15	5.84
	1893	4	8982.14	772.30	2579.89	142.07	1154.74	56.08	1.3	2.88	6.20
	1894	5	12161.35	826.85	3080.68	144.11	1286.32	56.08	1.3	3.75	6.75
	1895	6	13104.20	881.40	3841.82	147.2	1482.78	56.08	1.3	3.24	7.28
35-36	313	1	16408.63	915.85	4242.91	202.17	1697.22	92.98	1.20	4.11	4.50
	1910	2	13154.32	884.27	2794.48	197.13	1142.18	92.98	1.2	5.34	4.33
	1911	3	10150.59	854.12	1598.14	193.5	725.6	92.98	1.2	7.13	4.15
	1912	4	7268.57	815.36	732.41	191.28	602.4	92.98	1.2	6.72	3.91
	1424	4	7268.57	815.36	1367.97	129.88	947.45	77.39	1.2	3.71	5.36
	1913	5	9224.79	789.53	1710.46	125.23	1138.52	77.39	1.2	3.94	5.19
	1914	6	10740.15	765.12	2140.84	123.91	1384.13	77.39	1.2	3.69	5.00
	1915	7	12525.63	739.28	2385.59	121.98	1534.13	77.39	1.2	3.94	4.81
	1423	7	12525.63	739.28	3073.25	50.04	1733.45	54.64	1.2	3.15	7.91
	1916	8	13755.38	726.36	3261.45	40.26	1959.68	54.64	1.2	3.11	7.91
	1422	8	13755.38	726.36	3261.59	45.28	1960.01	48.03	1.2	3.11	8.91
	1917	9	12471.41	736.41	2754.1	49.67	1604.92	48.03	1.2	3.55	8.97
	1918	10	10553.47	753.64	2429.21	50.62	1623.83	48.03	1.2	2.92	9.18
	1421	10	10553.47	753.64	2342.8	118.23	1623.88	75.54	1.2	2.96	5.09
	1919	11	8941.87	769.43	1816.62	120.61	1302.87	75.54	1.2	3.24	5.20
1920	12	7185.94	808.19	1219.82	124.76	970.02	75.54	1.2	3.70	5.48	
1420	12	7185.94	808.19	1106.1	222.91	758.72	102.24	1.2	4.86	3.25	
1921	13	10129.75	852.69	2125.77	225.15	678.96	102.24	1.2	6.95	3.51	
1922	14	13079.16	879.96	3276.39	228.16	1049.95	102.24	1.2	5.38	3.66	
1923	15	16320.77	911.54	4629.96	232.23	1529.2	102.24	1.2	4.32	3.82	
36-37	314	1	13154.32	884.27	4288.01	169.36	1267.3	80.45	1.27	3.62	5.00
	1926	2	9818.55	831.15	2413.24	162.66	984.61	80.45	1.27	4.11	4.67
	1927	3	6842.26	778.04	1671.4	160.41	869.66	80.45	1.27	3.25	4.29
	1426	3	6842.26	778.04	860.58	64.95	866.64	38.27	1.27	4.00	10.98
	1928	4	6281.57	727.80	418.08	60.92	1154.49	38.27	1.27	3.01	10.27
	1425	4	6281.57	727.80	418.33	23.32	1154.33	53.15	1.27	3.01	7.95

Lakefront Trestle - 5C1 Girder Ratings



Made By: CTG  
Checked By: DMP

Date: 4/10/2012  
Date: 4/13/2012

Job No.: P402110046  
Sheet No.: \_\_\_\_\_

Girder Rating - As Built

Girders			Girder Spreadsheet Section	CAPACITIES		SERVICE LOAD				IMPACT	RATING FACTORS - 5C1	
						DEAD LOAD		5C1			Moment	Shear
Bents	STAAD Beam			Moment (kip-ft)	Shear (kips)	M <sub>DL</sub> (k-ft)	V <sub>DL</sub> (k)	M <sub>LL</sub> (k-ft)	V <sub>LL</sub> (k)		Oper.	Oper.
SECTION A - NORTH	14-15	271	End	4694.37	603.39	849.89	68.49	501.13	37.91	1.27	4.34	8.22
		1716	Mid	6697.01	603.39	1331.27	59.68	819.98	37.91	1.27	3.67	8.40
		415	Mid	6697.01	603.39	1331.32	68.52	820.25	45.26	1.27	3.67	6.88
		1717	End	4694.37	603.39	963.26	78.6	571.32	45.26	1.27	3.65	6.71
	15-16	272	n/a	2559.85	487.18	306.82	4.83	275.54	12.79	1.30	4.64	22.25
	16-17	273	End	4694.37	603.39	803.7	64.59	567.43	45.72	1.28	3.87	6.83
		1720	Mid	5795.99	603.39	1095.64	54.51	818.87	45.72	1.28	3.21	7.00
		479	Mid	5795.99	603.39	1095.65	50.5	818.87	38.77	1.28	3.21	8.34
1722		End	4694.37	603.39	825.74	60.4	605.62	38.77	1.28	3.59	8.14	
SECTION A - SOUTH	14-15	294	End	4694.37	603.39	749.16	61.14	471	35.73	1.27	4.78	8.88
		1718	Mid	6697.01	603.39	1173.31	52.37	774.72	35.73	1.27	4.04	9.07
		416	Mid	6697.01	603.39	1173.34	59.83	774.97	42.71	1.27	4.04	7.45
		1719	End	4694.37	603.39	853.08	69.91	540.04	42.71	1.27	4.02	7.27
	15-16	295	n/a	2559.85	487.18	268.6	3.75	299.43	13.91	1.30	4.37	20.52
	16-17	296	End	4694.37	603.39	734.81	60.14	597.09	48.36	1.27	3.79	6.58
		1721	Mid	5795.99	603.39	1002.28	50.06	863.09	48.36	1.27	3.15	6.74
		480	Mid	5795.99	603.39	1002.28	43.71	863.08	39.32	1.27	3.15	8.42
1723		End	4694.37	603.39	769.69	53.98	646.8	39.32	1.27	3.46	8.21	
SECTION B - NORTH	17-18	274	1	2233.54	338.78	125.4	13.74	88.43	8.91	1.30	13.85	21.31
		1724	2	2327.59	350.26	225.52	15.28	149.94	8.91	1.3	8.03	21.94
		1725	3	2684.18	392.75	339.38	16.93	212.96	8.91	1.3	6.23	24.62
		1726	4	3095.15	439.84	412.53	17.94	250.36	8.91	1.3	6.05	27.66
	18-19	275	1	2973.15	426.06	583.53	71	378.45	44.6	1.27	3.54	4.53
		1730	2	6232.06	419.17	1327.98	67.09	892.65	44.6	1.27	3.06	4.51
		1387	2	6232.06	419.17	1328.2	69.28	892.79	47.88	1.27	3.06	4.16
		1732	3	6909.10	460.51	1095.89	73.12	730.5	47.88	1.27	4.55	4.62
		1734	4	3651.07	500.70	487.8	74.85	321.6	47.88	1.27	5.68	5.10
	1736	5	4089.05	546.64	759.2	77.43	471.76	47.88	1.27	3.98	5.64	
	19-20	276	1	3835.28	520.23	573.86	24.6	363.6	13.43	1.30	5.03	21.51
		1738	2	3322.54	465.10	453.84	23.31	296.31	13.43	1.3	5.46	19.16
		1739	3	3857.14	522.52	118.98	19.44	85.88	13.43	1.3	25.51	21.91
	SECTION B - SOUTH	17-18	297	1	2205.51	335.33	111.34	12.33	95.33	9.62	1.30	12.79
1727			2	2346.52	352.56	209.68	14	167.19	9.62	1.3	7.34	20.57
1728			3	2713.69	396.20	318.59	15.71	237.7	9.62	1.3	5.72	23.11
1729			4	3074.72	437.54	386.79	16.73	278.15	9.62	1.3	5.47	25.57
18-19		298	1	2973.15	426.06	540.98	66.39	413.42	49.23	1.27	3.33	4.18
		1731	2	6232.06	419.17	1239.16	62.48	989.62	49.23	1.27	2.83	4.16
		1408	2	6232.06	419.17	1239.17	63.61	989.15	52.39	1.27	2.83	3.89
		1733	3	6909.10	460.51	1026.06	67.45	811.57	52.39	1.27	4.16	4.31
		1735	4	3651.07	500.70	466.37	69.18	364.15	52.39	1.27	5.06	4.75
		1737	5	4089.05	546.64	686.65	71.76	503.88	52.39	1.27	3.84	5.24
19-20		299	1	3879.04	524.82	520.33	21.16	384.77	12.86	1.30	4.93	22.88
		1740	2	3343.45	467.40	419.26	19.88	321.43	12.86	1.3	5.15	20.32
		1741	3	4033.44	540.90	91.35	15.25	81.43	12.86	1.3	28.45	23.98





Lakefront Trestle - 5C1 Girder Ratings



Made By: CTG  
Checked By: DMP

Date: 4/10/2012  
Date: 4/13/2012

Job No.: P402110046  
Sheet No.: \_\_\_\_\_

Girder Rating - As Built

Girders	Girder Spreadsheet	CAPACITIES		SERVICE LOAD						RATING FACTORS - 5C1		
				DEAD LOAD		5C1		IMPACT	Moment	Shear		
SECTION E - SOUTH	26-27	304	1	6536.27	599.46	273.65	59.1	192.5	38.27	1.26	19.60	8.34
		1803	2	5959.87	555.83	370.34	56.82	239.38	38.27	1.26	13.97	7.69
		1804	3	5383.16	511.04	894.93	55.04	615.68	38.27	1.26	4.18	7.01
		1805	4	6930.34	474.29	1481.01	51.65	1073.66	38.27	1.26	2.85	6.49
		1412	4	6930.34	474.29	1481.02	70.83	1073.69	55.23	1.26	2.85	4.22
		1806	5	5368.57	509.89	663.26	73.88	410.93	55.23	1.26	6.69	4.57
		1807	6	5944.89	554.68	347.32	75.64	351.35	55.23	1.26	9.55	5.04
		1808	7	6520.92	598.32	823.18	77.89	693.72	55.23	1.26	4.80	5.49
	27-28	305	1	5161.84	571.90	629.19	4.08	585.89	23.84	1.30	4.39	14.06
		1810	2	4429.00	506.44	609.82	2.15	444.03	23.84	1.3	4.85	12.50
		1812	3	4105.40	476.59	612.25	2.44	375.11	23.84	1.3	5.22	11.75
		1814	4	4429.00	506.44	624.4	3.63	470.48	23.84	1.3	4.55	12.45
		1816	5	5148.70	570.75	652.45	5.53	616.37	23.84	1.3	4.13	13.99
	28-29	306	1	6520.92	598.32	838.93	78.95	731.56	57.49	1.26	4.53	5.26
		1825	2	5944.89	554.68	354.13	76.69	373.39	57.49	1.26	8.97	4.83
		1826	3	5368.57	509.89	673.16	74.92	421.92	57.49	1.26	6.50	4.38
		1827	4	6930.34	474.29	1499.19	71.87	1108.23	57.49	1.26	2.74	4.04
		1413	4	6930.34	474.29	1499.26	52.21	1108.22	39.29	1.26	2.74	6.32
		1828	5	5368.57	509.89	904.98	55.6	636.79	39.29	1.26	4.02	6.80
		1829	6	5944.89	554.68	374.9	57.37	250.47	39.29	1.26	13.30	7.46
		1830	7	6520.92	598.32	281.26	59.69	196.8	39.29	1.26	19.09	8.09
SECTION F - NORTH	29-30	286	1	5161.84	571.90	148.17	25.18	92.95	15.2	1.30	31.63	20.99
		1831	2	4429.00	506.44	264.51	26.52	161.36	15.2	1.3	14.98	18.37
		1832	3	4068.50	473.14	593.72	29.91	338.7	15.2	1.3	5.76	16.91
		1833	4	4441.58	507.59	729.79	31.24	406.35	15.2	1.3	5.09	18.18
		1834	5	5174.98	573.05	935.53	33.23	503.37	15.2	1.3	4.65	20.63
	30-31	287	1	5493.40	600.61	1063.78	91.7	588.53	49.24	1.26	4.26	5.97
		1839	2	4888.10	547.79	504.31	89.75	284.91	49.24	1.26	9.07	5.35
		1841	3	4366.25	500.70	957.73	87.17	540.57	49.24	1.26	3.52	4.80
		1843	4	5293.91	481.18	1097.96	84.7	622.37	49.24	1.26	3.79	4.60
		1845	5	8936.33	470.84	1890.67	84.11	1101.85	49.24	1.26	3.59	4.48
		1396	5	8936.33	470.84	1890.71	84.49	1101.03	48.93	1.26	3.59	4.50
		1847	6	5293.91	481.18	1092.63	85.14	623.53	48.93	1.26	3.79	4.62
		1849	7	4366.25	500.70	936.68	87.61	533.57	48.93	1.26	3.60	4.83
		1851	8	4901.04	548.94	516.72	90.14	278.07	48.93	1.26	9.29	5.39
		1853	9	5506.79	601.76	1076.8	92.09	578.76	48.93	1.26	4.33	6.01
	31-32	288	1	5201.30	575.35	911.91	31.86	495.78	14.53	1.30	4.79	21.74
		1855	2	4466.77	509.89	721.35	29.94	406.17	14.53	1.3	5.14	19.18
		1856	3	4093.09	475.44	585.64	28.55	338.75	14.53	1.3	5.82	17.85
		1857	4	4656.95	527.12	247.33	24.86	154.71	14.53	1.3	16.58	20.15
		1858	5	5641.25	613.25	130.53	23.4	84.38	14.53	1.3	38.37	23.74



Lakefront Trestle - 5C1 Girder Ratings



Made By: CTG  
Checked By: DMP

Date: 4/10/2012  
Date: 4/13/2012

Job No.: P402110046  
Sheet No.: \_\_\_\_\_

Girder Rating - As Built

Girders	Girder Spreadsheet	CAPACITIES		SERVICE LOAD					RATING FACTORS - 5C1			
				DEAD LOAD		5C1		IMPACT	Moment	Shear		
SECTION F - SOUTH	29-30	307	1	5188.13	574.20	126.56	20.23	95.2	14.45	1.30	31.22	22.44
		1835	2	4441.58	507.59	231.44	21.72	167.43	14.45	1.3	14.63	19.63
		1836	3	3921.76	459.36	529.66	25.37	350.42	14.45	1.3	5.46	17.46
		1837	4	4466.77	509.89	663.89	26.9	424.61	14.45	1.3	5.02	19.45
		1838	5	5214.47	576.50	835.5	28.82	513.59	14.45	1.3	4.76	22.07
	30-31	308	1	5493.40	600.61	975.18	85.61	614.35	52.74	1.26	4.20	5.66
		1840	2	4888.10	547.79	453.24	83.65	289.06	52.74	1.26	9.08	5.08
		1842	3	4366.25	500.70	906.57	81.07	595.2	52.74	1.26	3.27	4.58
		1844	4	5293.91	481.18	1036.68	78.6	682.84	52.74	1.26	3.53	4.39
		1846	5	8936.33	470.84	1770.08	78.01	1196.5	52.74	1.26	3.39	4.28
		1414	5	8936.33	470.84	1770.07	79.09	1196.47	53.38	1.26	3.39	4.21
		1848	6	5293.91	481.18	1024.67	79.74	675.47	53.38	1.26	3.58	4.32
		1850	7	4366.25	500.70	878.63	82.21	577.31	53.38	1.26	3.41	4.50
		1852	8	4901.04	548.94	485.23	84.74	308.2	53.38	1.26	8.46	5.02
	1854	9	5506.79	601.76	1012.14	86.69	636.35	53.38	1.26	4.02	5.59	
	31-32	309	1	5214.47	576.50	863.98	30.22	541.01	15.66	1.30	4.47	20.30
		1859	2	4479.38	511.04	683.58	28.29	444.44	15.66	1.3	4.78	17.92
		1860	3	4130.06	478.88	549.19	26.84	368.08	15.66	1.3	5.49	16.78
		1861	4	4644.20	525.97	232.69	23.14	169.71	15.66	1.3	15.14	18.74
		1862	5	5654.75	614.39	126.19	21.71	95.32	15.66	1.3	34.08	22.15
SECTION G - NORTH	32-33	289	1	6028.50	647.53	588.92	107.97	386.94	67.28	1.24	8.44	4.68
		1863	2	6094.81	592.57	1359.13	104.11	865.44	67.28	1.24	3.10	4.22
		1864	3	7824.06	568.46	1642.63	101.4	1054.69	67.28	1.24	3.35	4.03
		1865	4	10777.45	543.19	2439.94	100.18	1603.3	67.28	1.24	2.94	3.81
		1398	4	10777.45	543.19	2439.82	33.77	1603.23	30.76	1.24	2.94	10.07
		1866	5	10357.76	523.67	2285.11	40.52	1478.49	30.76	1.24	3.10	9.50
		1867	6	7331.16	537.45	1854.56	46.28	1176	30.76	1.24	2.60	9.63
		1397	6	7331.16	537.45	1272.01	157.51	837.36	83.44	1.24	4.21	2.47
		1868	7	5847.41	573.05	918.67	159.78	652.42	83.44	1.24	4.42	2.72
	1869	8	6285.93	607.50	1222.17	162.14	478.89	83.44	1.24	6.08	2.95	
	1870	9	7559.36	645.03	2619.58	165.47	1190.72	83.44	1.24	2.16	3.20	
	33-34	290	1	7464.66	635.59	2404.65	123.71	1009.02	54.52	1.29	2.56	5.19
		1877	2	6886.06	605.21	1675.65	121.4	840.38	54.52	1.29	3.34	4.89
		1878	3	5775.19	567.31	1328.23	120.31	758.87	54.52	1.29	3.18	4.49
		1879	4	5347.06	532.86	538.72	118.04	743.35	54.52	1.29	3.73	4.15
		1399	4	5347.06	532.86	478.55	19.53	743.75	33.07	1.29	3.79	9.15
1880		5	5905.36	577.65	317.35	22.79	448.08	33.07	1.29	7.31	9.88	
1881		6	6028.50	644.90	116.38	24.84	133.92	33.07	1.29	26.17	11.05	

Lakefront Trestle - 5C1 Girder Ratings



Made By: CTG  
Checked By: DMP

Date: 4/10/2012  
Date: 4/13/2012

Job No.: P402110046  
Sheet No.: \_\_\_\_\_

Girder Rating - As Built

Girders	Girder Spreadsheet	CAPACITIES				SERVICE LOAD				IMPACT	RATING FACTORS - 5C1	
		Girder ID	Capacity 1	Capacity 2	Capacity 3	DEAD LOAD		5C1			Moment	Shear
						DL1	DL2	5C1_1	5C1_2			
SECTION G - SOUTH	32-33	1416	1	5745.07	612.76	115.86	29.56	105.86	31.49	1.27	32.01	11.05
		1871	2	5929.23	607.50	248.66	27.4	263.27	31.49	1.27	12.90	11.00
		1872	3	5359.21	560.42	489.78	25.73	578.19	31.49	1.27	4.95	10.14
		1873	4	4992.92	529.41	673.64	22.49	852.54	31.49	1.27	2.93	9.62
		1415	4	4992.92	529.41	673.72	74.51	852.56	48.25	1.27	2.92	5.43
		1874	5	5359.21	560.42	742.02	77.75	510.73	48.25	1.27	5.21	5.77
		1875	6	5929.23	607.50	1125.82	79.38	550.71	48.25	1.27	4.91	6.33
		1876	7	5745.07	632.30	1604.68	81.43	626.49	48.25	1.27	3.54	6.61
	33-34	311	1	6486.10	642.63	1670.75	106.9	704.25	70.84	1.25	3.77	4.38
		1882	2	7289.94	615.54	1052.38	104.51	465.38	70.84	1.25	7.83	4.17
		1883	3	7787.30	566.16	793.98	101.59	1008.48	70.84	1.25	4.12	3.77
		1418	4	7186.50	528.26	1381.84	34.74	1013.75	29.32	1.25	3.27	10.14
		1884	5	8393.98	542.04	1508.27	26.54	1128.73	29.32	1.25	3.51	10.65
		1417	5	8393.98	542.04	1508.37	69.5	1128.54	53.44	1.25	3.51	5.20
		1885	6	7879.28	571.90	1182.33	72.18	873.64	53.44	1.25	4.47	5.51
		1886	7	6174.38	613.25	745.64	74.73	544.19	53.44	1.25	5.89	5.94
SECTION H - NORTH	34-35	291	1	7103.62	801.01	285.71	27.02	528.96	45.87	1.27	7.71	10.11
		1888	2	6424.30	740.72	495.71	22.53	996.26	45.87	1.27	3.51	9.39
		1401	2	6424.30	740.72	857.78	68.47	995.97	28.45	1.27	3.23	13.87
		1400	3	6761.23	770.86	1868	183.46	1128.86	81.29	1.27	2.32	3.97
		1889	4	9448.78	805.32	2702.42	185.64	1295.57	81.29	1.27	2.77	4.20
		1890	5	12954.14	872.78	4762.6	192.09	1697.77	81.29	1.27	2.41	4.64
	35-36	292	1	13024.07	911.54	5078.99	257.6	1995.44	124.46	1.20	2.06	2.97
		1896	2	11645.15	879.96	3501.71	253.91	1301.66	124.46	1.2	3.49	2.83
		1897	3	10171.45	855.56	2254.66	251.22	826.2	124.46	1.2	5.62	2.72
		1898	4	7202.44	809.62	1207.12	249.15	597.34	124.46	1.2	6.05	2.50
		1406	4	7202.44	809.62	1366.74	137.85	1030.46	83.61	1.2	3.38	4.83
		1899	5	8941.87	769.43	2030.29	133.89	1376.58	83.61	1.2	2.93	4.56
		1900	6	10553.47	753.64	2678.31	131.51	1768.8	83.61	1.2	2.56	4.47
		1405	6	10553.47	753.64	2755.77	60.03	1779.12	49.27	1.2	2.51	8.79
		1901	7	12101.89	736.41	3391.02	59.31	1879.26	49.27	1.2	2.62	8.58
		1902	8	13384.98	726.36	3799.41	52.18	2171.4	49.27	1.2	2.49	8.57
		1404	8	13384.98	726.36	3799.36	50.65	2171.41	54.41	1.2	2.49	7.78
		1903	9	12420.03	753.64	3371.77	57.65	1862.74	54.41	1.2	2.77	8.00
		1403	9	12420.03	753.64	2769.5	140.25	1557.17	86.29	1.2	3.63	4.24
		1904	10	10951.11	778.04	1549.24	141.89	934.24	86.29	1.2	6.13	4.41
		1905	11	9123.47	782.35	1131.31	143.32	765.33	86.29	1.2	6.41	4.43
		1906	12	7268.57	815.36	707.69	145.4	598.63	86.29	1.2	6.80	4.65
		1402	12	7268.57	815.36	1585.78	216.16	839.85	119.1	1.2	3.97	2.88
		1907	13	10129.75	852.69	2365.51	217.93	1148.05	119.1	1.2	3.94	3.06
	1908	14	13029.12	877.09	3486.88	220.96	1652.9	119.1	1.2	3.29	3.17	
	1909	15	16291.51	910.11	4636.1	224.53	2234.08	119.1	1.2	2.95	3.33	
	36-37	293	1	12954.14	872.78	4265.18	162.99	1991.03	59.49	1.30	2.20	6.57
		1924	2	9346.78	798.14	2701.46	157.21	1495.28	59.49	1.3	2.31	5.91
		1925	3	6376.61	736.41	1567.29	153.7	1124.96	59.49	1.3	2.28	5.34
		1407	3	6376.61	736.41	969.33	48.7	926.59	42.65	1.3	3.27	9.34

Lakefront Trestle - 5C1 Girder Ratings



Made By: CTG  
Checked By: DMP

Date: 4/10/2012  
Date: 4/13/2012

Job No.: P402110046  
Sheet No.: \_\_\_\_\_

Girder Rating - As Built

SECTION H - SOUTH	Girders	Girder Spreadsheet	CAPACITIES		SERVICE LOAD					RATING FACTORS - 5C1	
					DEAD LOAD		5C1		IMPACT	Moment	Shear
34-35	312	1	7103.62	801.01	231.94	38.51	255.57	41.1	1.30	15.75	10.81
	1891	2	6712.76	766.56	436.02	40.48	467.93	41.1	1.3	7.77	10.28
	1892	3	6344.89	733.54	874.34	44.36	892.59	41.1	1.3	3.45	9.73
	1419	3	6344.89	733.54	1424.04	138.14	1085.33	61.03	1.3	2.45	5.37
	1893	4	8982.14	772.30	2579.89	142.07	1482.85	61.03	1.3	2.25	5.70
	1894	5	12161.35	826.85	3080.68	144.11	1651.49	61.03	1.3	2.92	6.20
	1895	6	13104.20	881.40	3841.82	147.2	1903.28	61.03	1.3	2.52	6.69
35-36	313	1	16408.63	915.85	4242.91	202.17	2183.47	111.89	1.20	3.20	3.74
	1910	2	13154.32	884.27	2794.48	197.13	1442.38	111.89	1.2	4.23	3.60
	1911	3	10150.59	854.12	1598.14	193.5	895.79	111.89	1.2	5.78	3.45
	1912	4	7268.57	815.36	732.41	191.28	552.31	111.89	1.2	7.33	3.25
	1424	4	7268.57	815.36	1367.97	129.88	932.22	86.63	1.2	3.78	4.78
	1913	5	9224.79	789.53	1710.46	125.23	1141.08	86.63	1.2	3.93	4.64
	1914	6	10740.15	765.12	2140.84	123.91	1419.96	86.63	1.2	3.59	4.47
	1915	7	12525.63	739.28	2385.59	121.98	1587.71	86.63	1.2	3.81	4.30
	1423	7	12525.63	739.28	3073.25	50.04	1796.16	53.62	1.2	3.04	8.06
	1916	8	13755.38	726.36	3261.45	40.26	1993.75	53.62	1.2	3.06	8.06
	1422	8	13755.38	726.36	3261.59	45.28	1993.34	41.94	1.2	3.06	10.20
	1917	9	12471.41	736.41	2754.1	49.67	1692.45	41.94	1.2	3.37	10.27
	1918	10	10553.47	753.64	2429.21	50.62	1596.24	41.94	1.2	2.97	10.51
	1421	10	10553.47	753.64	2342.8	118.23	1576.79	79.79	1.2	3.05	4.82
	1919	11	8941.87	769.43	1816.62	120.61	1255.65	79.79	1.2	3.36	4.92
1920	12	7185.94	808.19	1219.82	124.76	974.59	79.79	1.2	3.68	5.19	
1420	12	7185.94	808.19	1106.1	222.91	463.36	117.56	1.2	7.95	2.83	
1921	13	10129.75	852.69	2125.77	225.15	832.18	117.56	1.2	5.67	3.05	
1922	14	13079.16	879.96	3276.39	228.16	1293.75	117.56	1.2	4.37	3.18	
1923	15	16320.77	911.54	4629.96	232.23	1943.93	117.56	1.2	3.40	3.32	
36-37	314	1	13154.32	884.27	4288.01	169.36	1612.71	72.99	1.27	2.85	5.51
	1926	2	9818.55	831.15	2413.24	162.66	1254.02	72.99	1.27	3.23	5.14
	1927	3	6842.26	778.04	1671.4	160.41	1108.16	72.99	1.27	2.55	4.73
	1426	3	6842.26	778.04	860.58	64.95	946.63	32.42	1.27	3.66	12.96
	1928	4	6281.57	727.80	418.08	60.92	989.2	32.42	1.27	3.51	12.12
	1425	4	6281.57	727.80	418.33	23.32	989.16	45.55	1.27	3.51	9.27



Made By: CTG  
Checked By: DMP

Date: 4/12/2012  
Date: 4/13/2012

Job No.: P402110046  
Sheet No.: \_\_\_\_\_

**Lakefront Trestle- Girder Fatigue Summary**

Redundant? No →  $f = 1.0$  (Calculate SAFE Life per ODOT BDM 402.2.6)  
 $R_s = 1.68$   
 Past ADTT ( $T_P$ ) = 257 →  $T_N = 580$  (Future ADTT, assuming growth rate of %1/year)  
 Weight Ratios = 1.0 ( $W_P/W, W_N/W$ )  
 Impact\* = 1.15 (Per ODOT BDM 402.2.6)  
 $F_{s3} = 0.96$   
 $Y_P = 72$  (Present age of the bridge in years)  $Y_{I,MIN} = 10$  years

\* Impact is applied in calculation of stress range,  $S_r$ . Do not include in service moment range.

**Girder Rating - As Built**

Girders			Girder Spreadsheet Section	Section Moduli ( $in^3$ )		SERVICE LOAD				FATIGUE				
Bents	STAAD Beam			$S_{x,top}$	$S_{x,btm}$	$M_{LL+}$ (k-ft)	$M_{LL-}$ (k-ft)	$S_r$ (ksi)	C (Cycles per truck)	Category	K (Detail Constant)	$Y_I$ (years)	$Y_N$ (years)	$Y_r$ (years)
SECTION A - NORTH	14-15	271	End	1507.19	1507.19	156.3	81.33	2.18	1.00	D	6	478.03	211.77	179.87
		1716	Mid	2123.76	2123.76	255.78	0.08	1.66	1.00	D	6	1071.43	474.64	442.74
		415	Mid	2123.76	2123.76	256.04	0.06	1.66	1.00	D	6	1068.42	473.31	441.41
		1717	End	1507.19	1507.19	178.59	145.26	2.97	1.00	D	6	188.85	83.66	51.77
	15-16	272	n/a	825.23	825.23	24.39	77.95	1.71	1.50	D	6	654.86	290.10	258.20
	16-17	273	End	1507.19	1507.19	164.22	138.22	2.77	1.00	D	6	231.87	102.72	70.82
		1720	Mid	1853.74	1853.74	236.55	17.56	1.89	1.00	D	6	727.33	322.21	290.31
		479	Mid	1853.74	1853.74	236.55	17.56	1.89	1.00	D	6	727.33	322.21	290.31
		1722	End	1507.19	1507.19	174.83	78.62	2.32	1.00	D	6	393.99	174.54	142.64
	SECTION A - SOUTH	14-15	294	End	1507.19	1507.19	151.02	78.2	2.10	1.00	D	6	532.60	235.94
1718			Mid	2123.76	2123.76	248.44	0.25	1.62	1.00	D	6	1166.79	516.89	484.99
416			Mid	2123.76	2123.76	248.7	0.15	1.62	1.00	D	6	1164.55	515.89	483.99
1719			End	1507.19	1507.19	173.57	140.58	2.88	1.00	D	6	206.89	91.65	59.76
15-16		295	n/a	825.23	825.23	25.5	81.04	1.78	1.50	D	6	580.42	257.13	225.23
16-17		296	End	1507.19	1507.19	165.64	141.01	2.81	1.00	D	6	222.45	98.54	66.65
		1721	Mid	1853.74	1853.74	238.97	17.61	1.91	1.00	D	6	706.53	312.99	281.10
		480	Mid	1853.74	1853.74	238.97	17.6	1.91	1.00	D	6	706.61	313.03	281.13
		1723	End	1507.19	1507.19	178.96	76.51	2.34	1.00	D	6	384.71	170.43	138.53
SECTION B - NORTH		17-18	274	1	713.34	713.34	0.15	28.33	0.55	1.50	D	6	19626.14	8694.32
	1724		2	743.51	743.51	0.26	48.04	0.90	1.50	D	6	4555.92	2018.26	1986.36
	1725		3	857.37	857.37	0.36	68.23	1.10	1.50	D	6	2439.43	1080.86	1048.76
	1726		4	987.62	987.62	0.43	80.21	1.13	1.50	D	6	2294.47	1016.44	984.55
	18-19	275	1	949.06	949.06	113.77	121.46	3.42	1.00	D	6	123.04	54.51	22.61
		1730	2	2033.72	2033.72	288.57	0.96	1.96	1.00	D	6	649.30	287.64	255.74
		1387	2	2033.72	2033.72	288.83	0.76	1.97	1.00	D	6	648.90	287.46	255.57
		1732	3	2260.09	2260.09	236.2	1.21	1.45	1.00	D	6	1616.33	716.03	684.13
	17-18	1734	4	1162.23	1162.23	103.6	3.04	1.27	1.00	D	6	2425.33	1074.41	1042.52
		1736	5	1298.62	1298.62	1.16	153.95	1.65	1.00	D	6	1099.45	487.05	455.16
19-20	276	1	1219.71	1219.71	1.4	118.51	1.36	1.50	D	6	1314.53	582.33	550.44	
	1738	2	1059.25	1059.25	1.14	96.58	1.27	1.50	D	6	1590.78	704.71	672.82	
	1739	3	1226.52	1226.52	0.33	27.99	0.32	1.50	D	6	101463.41	44947.99	44916.09	
SECTION B - SOUTH	17-18	297	1	704.34	704.34	0.22	28.78	0.57	1.50	D	6	17894.55	7927.23	7895.34
		1727	2	749.57	749.57	0.39	50.47	0.94	1.50	D	6	3998.27	1771.22	1739.33
		1728	3	866.76	866.76	0.55	71.75	1.15	1.50	D	6	2152.00	953.33	921.43
		1729	4	981.17	981.17	0.65	83.96	1.19	1.50	D	6	1947.74	862.84	830.95
	18-19	298	1	949.06	949.06	120.04	125.42	3.57	1.00	D	6	108.29	47.97	16.08
		1731	2	2033.72	2033.72	302.44	0.94	2.06	1.00	D	6	564.38	250.02	218.12
		1408	2	2033.72	2033.72	302.8	0.91	2.06	1.00	D	6	562.54	249.20	217.31
		1733	3	2260.09	2260.09	248.28	1.62	1.53	1.00	D	6	1385.89	613.95	582.05
	17-18	1735	4	1162.23	1162.23	110.94	2.19	1.34	1.00	D	6	2031.41	899.91	868.01
		1737	5	1298.62	1298.62	3.14	155.53	1.69	1.00	D	6	1027.10	455.00	423.11
19-20	299	1	1233.34	1233.34	1.57	119.14	1.35	1.50	D	6	1332.24	590.18	558.28	
	1740	2	1065.82	1065.82	1.31	99.53	1.31	1.50	D	6	1474.76	653.31	621.42	
		1741	3	1281.35	1281.35	0.33	25.21	0.28	1.50	D	6	157726.99	69872.59	69840.69







Made By: CTG Date: 4/12/2012 Job No.: P402110046  
 Checked By: DMP Date: 4/13/2012 Sheet No.: \_\_\_\_\_

**Lakefront Trestle- Girder Fatigue Summary**

Redundant? No → f = 1.0 (Calculate SAFE Life per ODOT BDM 402.2.6)  
 Past ADTT (T<sub>P</sub>) = 257 → R<sub>s</sub> = 1.68  
 Weight Ratios = 1.0 (W<sub>P</sub>/W, W<sub>N</sub>/W) T<sub>N</sub> = 580 (Future ADTT, assuming growth rate of %1/year)  
 Impact\* = 1.15 (Per ODOT BDM 402.2.6)  
 F<sub>s3</sub> = 0.96  
 Y<sub>P</sub> = 72 (Present age of the bridge in years) Y<sub>I,MIN</sub> = **10 years**

\* Impact is applied in calculation of stress range, S<sub>r</sub>. Do not include in service moment range.

**Girder Rating - As Built**

Girders	Girder Spreadsheet	Section Moduli (in <sup>3</sup> )		SERVICE LOAD				FATIGUE						
				Fatigue Moment		K (Detail)		Y <sub>I</sub>	Y <sub>N</sub>	Y <sub>I</sub>				
SECTION E - SOUTH	26-27	304	1	2113.84	2113.84	16.81	55.1	0.47	1.00	D	6	47588.58	21081.60	21049.70
		1803	2	1928.69	1928.69	74	2.32	0.55	1.00	D	6	30235.94	13394.43	13362.54
		1804	3	1742.41	1742.41	186.48	5.44	1.52	1.00	D	6	1401.98	621.07	589.18
		1805	4	2258.52	2258.52	323.37	9.22	2.03	1.00	D	6	586.67	259.89	228.00
		1412	4	2258.52	2258.52	323.39	9.22	2.03	1.00	D	6	586.57	259.85	227.95
		1806	5	1737.68	1737.68	122.48	25.4	1.17	1.00	D	6	3039.74	1346.60	1314.70
		1807	6	1923.86	1923.86	29.22	108.59	0.99	1.00	D	6	5097.22	2258.05	2226.16
	1808	7	2108.92	2108.92	32.49	212.37	1.60	1.00	D	6	1196.97	530.25	498.36	
	27-28	305	1	1652.05	1652.05	41	180.09	1.85	1.50	D	6	521.10	230.85	198.95
		1810	2	1419.45	1419.45	4.01	136.86	1.37	1.50	D	6	1277.82	566.07	534.17
		1812	3	1316.05	1316.05	0.67	109.02	1.15	1.50	D	6	2157.15	955.61	923.72
		1814	4	1419.45	1419.45	6.63	130.69	1.34	1.50	D	6	1379.50	611.12	579.22
	28-29	1816	5	1647.90	1647.90	42.58	170.53	1.78	1.50	D	6	577.49	255.83	223.93
		306	1	2108.92	2108.92	32.78	206.38	1.56	1.00	D	6	1284.61	569.08	537.18
		1825	2	1923.86	1923.86	29.85	104.28	0.96	1.00	D	6	5528.38	2449.06	2417.16
		1826	3	1737.68	1737.68	122.43	24.27	1.17	1.00	D	6	3113.68	1379.35	1347.46
		1827	4	2258.52	2258.52	318.06	11.04	2.01	1.00	D	6	605.54	268.25	236.35
		1413	4	2258.52	2258.52	318.05	11.04	2.01	1.00	D	6	605.59	268.28	236.38
1828		5	1737.68	1737.68	182.92	6.62	1.51	1.00	D	6	1443.65	639.53	607.64	
SECTION F - NORTH	29-30	1829	6	1923.86	1923.86	72.19	2.99	0.54	1.00	D	6	31395.60	13908.16	13876.26
		1830	7	2108.92	2108.92	15.9	56.01	0.47	1.00	D	6	47257.17	20934.78	20902.89
		286	1	1652.05	1652.05	0.14	32.76	0.27	1.50	D	6	158140.67	70055.84	70023.95
		1831	2	1419.45	1419.45	0.24	56.86	0.56	1.50	D	6	19187.39	8499.96	8468.06
		1832	3	1304.23	1304.23	0.5	119.35	1.27	1.50	D	6	1609.58	713.04	681.14
	30-31	1833	4	1423.46	1423.46	0.6	143.19	1.39	1.50	D	6	1211.75	536.80	504.91
		1834	5	1656.20	1656.20	0.74	177.38	1.48	1.50	D	6	1004.07	444.80	412.90
		287	1	1756.61	1756.61	1.52	207.09	1.64	1.00	D	6	1118.59	495.53	463.64
		1839	2	1565.42	1565.42	45.85	100.21	1.29	1.00	D	6	2306.47	1021.76	989.86
		1841	3	1399.44	1399.44	190.38	1.23	1.89	1.00	D	6	729.89	323.34	291.44
		1843	4	1716.67	1716.67	219.17	0.92	1.77	1.00	D	6	899.01	393.83	361.93
1845		5	2905.74	2905.74	387.96	0.86	1.85	1.00	D	6	781.95	346.40	314.50	
1396		5	2905.74	2905.74	388.15	1.31	1.85	1.00	D	6	778.10	344.69	312.80	
1847	6	1716.67	1716.67	219.43	1.43	1.78	1.00	D	6	879.75	389.73	357.83		
31-32	1849	7	1399.44	1399.44	187.65	2.02	1.87	1.00	D	6	752.52	333.36	301.47	
	1851	8	1569.52	1569.52	43.49	99.12	1.25	1.00	D	6	2497.47	1106.37	1074.48	
	1853	9	1760.82	1760.82	0.71	205.38	1.62	1.00	D	6	1168.50	517.64	485.75	
	288	1	1664.52	1664.52	0.44	175.45	1.46	1.50	D	6	1058.53	468.92	437.03	
	1855	2	1431.49	1431.49	0.36	143.74	1.39	1.50	D	6	1224.44	542.42	510.53	
1856	3	1312.11	1312.11	0.3	119.88	1.26	1.50	D	6	1625.46	720.07	688.18		
1857	4	1492.03	1492.03	0.14	54.75	0.51	1.50	D	6	25085.04	11112.60	11080.70		
1858	5	1803.10	1803.10	0.08	29.86	0.23	1.50	D	6	272814.28	120855.91	120824.01		







Made By: CTG Date: 4/12/2012  
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Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

**Lakefront Trestle- Girder Fatigue Summary**

Redundant? No →  $f = 1.0$  (Calculate SAFE Life per ODOT BDM 402.2.6)  
 $R_s = 1.68$   
 Past ADTT ( $T_p$ ) = 257 →  $T_N = 580$  (Future ADTT, assuming growth rate of %1/year)  
 Weight Ratios = 1.0 ( $W_p/W, W_N/W$ )  
 Impact\* = 1.15 (Per ODOT BDM 402.2.6)  
 $F_{s3} = 0.96$   
 $Y_p = 72$  (Present age of the bridge in years)  $Y_{I,MIN} = 10$  years

\* Impact is applied in calculation of stress range,  $S_r$ . Do not include in service moment range.

**Girder Rating - As Built**

Girders	Girder Spreadsheet	Section Moduli (in <sup>3</sup> )		SERVICE LOAD				FATIGUE						
				Fatigue Moment				$K$ (Detail)	$Y_I$	$Y_N$	$Y_r$			
SECTION H - NORTH	34-35	291	1	2254.87	2254.87	150.53	68.13	1.34	1.00	D	6	2054.50	910.14	878.24
		1888	2	2043.23	2043.23	283.51	128.32	2.78	1.00	D	6	228.80	101.36	69.46
		1401	2	2043.23	2043.23	282.91	270.63	3.74	1.00	D	6	94.22	41.74	9.84
		1400	3	2148.37	2148.37	233.31	331.34	3.63	1.00	D	6	103.19	45.71	13.82
		1889	4	3047.73	3047.73	102.74	380.88	2.19	1.00	D	6	468.89	207.72	175.82
	1890	5	4204.46	4204.46	20.36	500.42	1.71	1.00	D	6	985.87	436.74	404.84	
	35-36	292	1	3770.35	4976.47	23.9	588.76	2.24	1.11	D	6	393.38	174.27	142.37
		1896	2	3514.62	4094.28	18.76	384.65	1.58	1.00	D	6	1238.93	548.84	516.95
		1897	3	3278.02	3278.02	22.42	248.69	1.14	1.00	D	6	3311.70	1467.07	1435.18
		1898	4	2285.54	2285.54	159.81	153.35	1.89	1.00	D	6	728.32	322.64	290.75
		1406	4	2285.54	2285.54	318.64	135.56	2.74	1.00	D	6	238.71	105.75	73.85
		1899	5	2885.55	2885.55	398.92	117.86	2.47	1.00	D	6	326.15	144.49	112.59
		1900	6	3422.56	3422.56	501.58	109.13	2.46	1.00	D	6	329.76	146.08	114.19
		1405	6	3422.56	3422.56	509.71	100.43	2.46	1.00	D	6	330.69	146.49	114.60
		1901	7	3927.80	3927.80	596.42	98.24	2.44	1.00	D	6	338.68	150.03	118.14
1902		8	4339.11	4339.11	669.24	79.05	2.38	1.00	D	6	365.30	161.82	129.93	
1404		8	4339.11	4339.11	669.25	65.11	2.34	1.00	D	6	386.48	171.21	139.31	
1903		9	4032.68	4032.68	565.88	43.47	2.09	1.00	D	6	543.04	240.57	208.67	
1403		9	4032.68	4032.68	515.79	45.41	1.92	1.00	D	6	695.16	307.95	276.06	
1904		10	3552.02	3552.02	301.12	48.24	1.36	1.00	D	6	1969.06	872.29	840.39	
1905		11	2943.71	2943.71	256.94	51.07	1.44	1.00	D	6	1635.48	724.51	692.62	
1906	12	2306.05	2306.05	215.31	107.71	1.93	1.00	D	6	681.67	301.98	270.08		
1402	12	2306.05	2306.05	142.68	254.97	2.38	1.00	D	6	365.39	161.87	129.97		
1907	13	3264.76	3264.76	52.27	345.95	1.68	1.00	D	6	1032.37	457.34	425.44		
1908	14	4228.71	4228.71	62.95	493.01	1.81	1.00	D	6	824.42	365.21	333.32		
1909	15	5302.00	5302.00	73.74	659.18	1.91	1.11	D	6	638.97	283.06	251.17		
36-37	293	1	4204.46	4204.46	65.67	588.62	2.15	1.00	D	6	497.13	220.23	188.33	
	1924	2	3015.14	3015.14	137.68	441.83	2.65	1.00	D	6	263.87	116.89	85.00	
	1925	3	2028.32	2028.32	187.13	332.19	3.53	1.00	D	6	111.62	49.45	17.55	
	1407	3	2028.32	2028.32	186.98	273.45	3.13	1.00	D	6	160.17	70.95	39.06	



Made By: CTG Date: 4/12/2012  
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Job No.: P402110046  
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**Lakefront Trestle- Girder Fatigue Summary**

Redundant? No → f = 1.0 (Calculate SAFE Life per ODOT BDM 402.2.6)  
 Past ADTT (T<sub>P</sub>) = 257 → R<sub>s</sub> = 1.68  
 Weight Ratios = 1.0 (W<sub>P</sub>/W, W<sub>N</sub>/W) T<sub>N</sub> = 580 (Future ADTT, assuming growth rate of %1/year)  
 Impact\* = 1.15 (Per ODOT BDM 402.2.6)  
 F<sub>s3</sub> = 0.96  
 Y<sub>p</sub> = 72 (Present age of the bridge in years) Y<sub>I,MIN</sub> = **10 years**

\* Impact is applied in calculation of stress range, S<sub>r</sub>. Do not include in service moment range.

**Girder Rating - As Built**

Girders	Girder Spreadsheet	Section Moduli (in <sup>3</sup> )		SERVICE LOAD				FATIGUE							
				Fatigue Moment				K (Detail)	Y <sub>I</sub>	Y <sub>N</sub>	Y <sub>F</sub>				
SECTION H - SOUTH	34-35	312	1	2254.87	2254.87	58.69	78.52	0.84	1.00	D	6	8314.91	3683.48	3651.59	
		1891	2	2133.27	2133.27	107.46	143.77	1.63	1.00	D	6	1147.03	508.13	476.24	
		1892	3	2018.40	2018.40	204.98	274.25	3.28	1.00	D	6	139.97	62.01	30.11	
		1419	3	2018.40	2018.40	204.77	333.7	3.68	1.00	D	6	98.67	43.71	11.82	
		1893	4	2898.46	2898.46	146.36	456.31	2.87	1.00	D	6	208.41	92.32	60.43	
		1894	5	3947.43	3947.43	58.59	508.33	1.98	1.00	D	6	632.46	280.18	248.28	
			1895	6	4253.00	4253.00	67.51	586	2.12	1.00	D	6	516.40	228.76	196.87
		35-36	313	1	5340.31	5340.31	77.85	670.56	1.93	1.11	D	6	613.21	271.65	239.75
	1910		2	4269.21	4269.21	62.26	443.42	1.63	1.00	D	6	1127.37	499.42	467.53	
	1911		3	3271.39	3271.39	63.42	279.65	1.45	1.00	D	6	1624.43	719.62	687.72	
	1912		4	2306.05	2306.05	136.79	178.56	1.89	1.00	D	6	732.62	324.55	292.65	
	1424		4	2306.05	2306.05	302.78	116.49	2.51	1.00	D	6	311.73	138.10	106.20	
	1913		5	2976.13	2976.13	349.58	51.92	1.86	1.00	D	6	763.05	338.03	306.13	
	1914		6	3483.37	3483.37	420.89	48.82	1.86	1.00	D	6	764.12	338.50	306.61	
	1915		7	4065.25	4065.25	472.63	44.87	1.76	1.00	D	6	908.20	402.33	370.44	
	1423		7	4065.25	4065.25	586.53	48.61	2.16	1.00	D	6	491.25	217.62	185.73	
	1916		8	4457.47	4457.47	624.25	59.54	2.12	1.00	D	6	518.98	229.91	198.01	
	1422		8	4457.47	4457.47	624.67	91.61	2.22	1.00	D	6	451.51	200.02	168.12	
	1917		9	4047.33	4047.33	569.59	109.32	2.31	1.00	D	6	396.94	175.84	143.95	
	1918		10	3422.56	3422.56	560.61	113.78	2.72	1.00	D	6	244.89	108.49	76.59	
	1421		10	3422.56	3422.56	558.4	120.18	2.74	1.00	D	6	240.38	106.49	74.59	
	1919		11	2885.55	2885.55	440.57	127.3	2.72	1.00	D	6	245.81	108.89	77.00	
	1920	12	2280.42	2280.42	318.81	142.42	2.79	1.00	D	6	226.44	100.31	68.41		
	1420	12	2280.42	2280.42	183.81	157.97	2.07	1.00	D	6	556.49	246.52	214.63		
	1921	13	3264.76	3264.76	18.13	259.47	1.17	1.00	D	6	3047.53	1350.05	1318.15		
	1922	14	4244.90	4244.90	23.08	415.45	1.43	1.00	D	6	1699.25	752.76	720.87		
	1923	15	5311.57	5311.57	28.82	606.2	1.65	1.11	D	6	987.73	437.56	405.66		
		36-37	314	1	4269.21	4269.21	23.52	502.32	1.70	1.00	D	6	1002.61	444.16	412.26
	1926		2	3165.69	3165.69	105.77	389.24	2.16	1.00	D	6	490.03	217.08	185.18	
	1927		3	2173.61	2173.61	224.17	343.26	3.60	1.00	D	6	105.31	46.65	14.76	
1426	3		2173.61	2173.61	271.43	292.34	3.58	1.00	D	6	107.37	47.57	15.67		
1928	4		1998.59	1998.59	324.87	218.03	3.75	1.00	D	6	93.47	41.41	9.51		
		1425	4	1998.59	1998.59	325.28	144.01	3.24	1.00	D	6	144.71	64.11	32.21	

**Lakefront Trestle - HS20 Girder Ratings**



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 Checked By: DMP      Date: 4/13/2012      Sheet No.: \_\_\_\_\_

**Girder Rating - As Inspected**

Girders			Girder Spreadsheet Section	CAPACITIES		SERVICE LOAD				IMPACT	RATING FACTORS - HS20			
	Bents	STAAD Beam		Moment (kip-ft)	Shear (kips)	DEAD LOAD		HS 20			Moment		Shear	
						M <sub>DL</sub> (k-ft)	V <sub>DL</sub> (k)	M <sub>LL</sub> (k-ft)	V <sub>LL</sub> (k)		Inv.	Opr.	Inv.	Opr.
NORTH	15-16	272	n/a	2513.86	---	306.82	4.83	361.78	16.64	1.30	2.07	3.46	---	---
SOUTH	16-17	1721	Mid	5767.84	---	1002.28	50.06	1121.34	62.81	1.27	1.44	2.41	---	---
NORTH	17-18	274	1	---	287.34	125.4	13.74	124.73	12.57	1.30	---	---	7.60	12.69

**Lakefront Trestle - 2F1 Girder Ratings**



Made By: CTG  
Checked By: DMP

Date: 4/10/2012  
Date: 4/13/2012

Job No.: P402110046  
Sheet No.: \_\_\_\_\_

**Girder Rating - As Inspected**

Girders			Girder Spreadsheet Section	CAPACITIES		SERVICE LOAD				IMPACT	RATING FACTORS - 2F1	
	Bents	STAAD Beam		Moment (kip-ft)	Shear (kips)	DEAD LOAD		2F1			Moment	Shear
						M <sub>DL</sub> (k-ft)	V <sub>DL</sub> (k)	M <sub>LL</sub> (k-ft)	V <sub>LL</sub> (k)		Oper.	Oper.
NORTH	15-16	272	n/a	2513.86	---	306.82	4.83	188.73	8.76	1.30	6.63	---
SOUTH	16-17	1721	Mid	5767.84	---	1002.28	50.06	540.28	30.23	1.27	5.01	---
NORTH	17-18	274	1	---	287.34	125.4	13.74	58.88	5.94	1.30	---	26.84

**Lakefront Trestle - 3F1 Girder Ratings**



Made By: CTG  
Checked By: DMP

Date: 4/10/2012  
Date: 4/13/2012

Job No.: P402110046  
Sheet No.: \_\_\_\_\_

**Girder Rating - As Inspected**

Girders			Girder Spreadsheet Section	CAPACITIES		SERVICE LOAD				IMPACT	RATING FACTORS - 3F1	
	Bents	STAAD Beam		Moment (kip-ft)	Shear (kips)	DEAD LOAD		3F1			Moment	Shear
						M <sub>DL</sub> (k-ft)	V <sub>DL</sub> (k)	M <sub>LL</sub> (k-ft)	V <sub>LL</sub> (k)		Oper.	Oper.
NORTH	15-16	272	n/a	2513.86	---	306.82	4.83	277.1	12.86	1.30	4.52	---
SOUTH	16-17	1721	Mid	5767.84	---	1002.28	50.06	795.52	44.52	1.27	3.40	---
NORTH	17-18	274	1	---	287.34	125.4	13.74	88.69	8.94	1.30	---	17.84

**Lakefront Trestle - 4F1 Girder Ratings**



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Date: 4/13/2012

Job No.: P402110046  
Sheet No.: \_\_\_\_\_

**Girder Rating - As Inspected**

Girders			Girder Spreadsheet Section	CAPACITIES		SERVICE LOAD				IMPACT	RATING FACTORS - 4F1	
	Bents	STAAD Beam		Moment (kip-ft)	Shear (kips)	DEAD LOAD		4F1			Moment	Shear
						M <sub>DL</sub> (k-ft)	V <sub>DL</sub> (k)	M <sub>LL</sub> (k-ft)	V <sub>LL</sub> (k)			
NORTH	15-16	272	n/a	2513.86	---	306.82	4.83	312.73	14.51	1.30	4.00	---
SOUTH	16-17	1721	Mid	5767.84	---	1002.28	50.06	899.61	50.35	1.27	3.01	---
NORTH	17-18	274	1	---	287.34	125.4	13.74	102.18	10.3	1.30	---	15.48

**Lakefront Trestle - 5C1 Girder Ratings**



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Date: 4/13/2012

Job No.: P402110046  
Sheet No.: \_\_\_\_\_

**Girder Rating - As Inspected**

Girders			Girder Spreadsheet Section	CAPACITIES		SERVICE LOAD				IMPACT	RATING FACTORS - 5C1	
	Bents	STAAD Beam		Moment (kip-ft)	Shear (kips)	DEAD LOAD		5C1			Moment	Shear
						M <sub>DL</sub> (k-ft)	V <sub>DL</sub> (k)	M <sub>LL</sub> (k-ft)	V <sub>LL</sub> (k)		Oper.	Oper.
NORTH	15-16	272	n/a	2513.86	---	306.82	4.83	275.54	12.79	1.30	4.54	---
SOUTH	16-17	1721	Mid	5767.84	---	1002.28	50.06	863.09	48.36	1.27	3.13	---
NORTH	17-18	274	1	---	287.34	125.4	13.74	88.43	8.91	1.30	---	17.90



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 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

**Lakefront Trestle- Girder Fatigue Summary**

Redundant? No →  $f = 1.0$  (Calculate SAFE Life per ODOT BDM 402.2.6)  
 $R_s = 1.68$   
 Past ADTT ( $T_p$ ) = 257 →  $T_N = 580$  (Future ADTT, assuming growth rate of %1/year)  
 Weight Ratios = 1.0 ( $W_p/W, W_N/W$ )  
 Impact\* = 1.15 (Per ODOT BDM 402.2.6)  
 $F_{s3} = 0.96$   
 $Y_p = 72$  (Present age of the bridge in years)  $Y_{f,MIN} = 272$  years

\* Impact is applied in calculation of stress range,  $S_r$ . Do not include in service moment range.

**Girder Rating - As Inspected**

Girders			Girder Spreadsheet Section	Section Moduli (in <sup>3</sup> )		SERVICE LOAD		FATIGUE						
	Bents	STAAD Beam		$S_{x,top}$	$S_{x,btm}$	Fatigue Moment		Sr (ksi)	C (Cycles per truck)	Category	K (Detail Constant)	$Y_1$	$Y_N$	$Y_f$
					$M_{LL+}$ (k-ft)	$M_{LL-}$ (k-ft)	(years)					(years)	(years)	
NORTH	15-16	272	n/a	819.01	793.87	24.39	77.95	1.78	1.00	D	6	874.50	387.40	355.51
SOUTH	16-17	1721	Mid	1850.72	1836.37	238.97	17.61	1.93	1.00	D	6	686.86	304.28	272.38
NORTH	17-18	274	1	703.45	694.58	0.15	28.33	0.57	1.00	D	6	27177.46	12039.53	12007.64





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Date 3/20/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

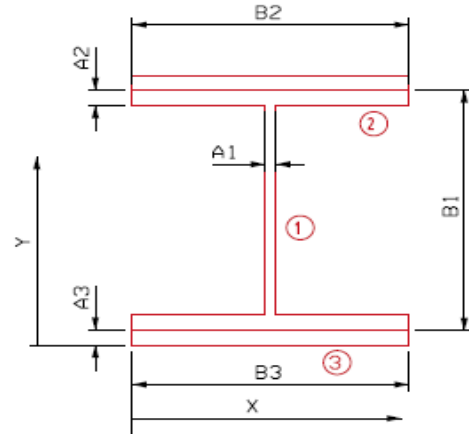
**Element Dimensions (without Section Losses):**

Rolled Beam

- $A_1 = t_w = 0.9450$  in
- $A_2 = t_f = 1.6800$  in
- $B_1 = d = 36.7200$  in
- $B_2 = b_f = 16.6550$  in

Cover Plate

- $A_3 = t = 0.7500$  in
- $B_3 = b = 16.5000$  in



**Girder 14 & 15 End Span  
1 Cover Plate T&B**

X-Axis Section Properties:

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web Plate	31.5252	19.1100	602.4466	2923.6723	0.0000	0.0000	2923.6723
2	Bottom Flange	27.9804	1.5900	44.4888	6.5810	17.5200	8588.5950	8595.1760
	Top Flange	27.9804	36.6300	1024.9221	6.5810	17.5200	8588.5950	8595.1760
3	Bottom Plate	12.3750	0.3750	4.6406	0.5801	18.7350	4343.6278	4344.2079
	Top Plate	12.3750	37.8450	468.3319	0.5801	18.7350	4343.6278	4344.2079
<b>Total</b>		<b>112.24</b>		<b>2144.83</b>	<b>2937.99</b>		<b>25864.45</b>	<b>28802.44</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	19.1100 in	S <sub>top</sub> =	1507.19 in <sup>3</sup>	y-bar =	19.1100 in	S <sub>top</sub> =	1507.19 in <sup>3</sup>
I <sub>x</sub> =	28802.44 in <sup>4</sup>	S <sub>bottom</sub> =	1507.19 in <sup>3</sup>	I <sub>x</sub> =	28802.44 in <sup>4</sup>	S <sub>bottom</sub> =	1507.19 in <sup>3</sup>
C <sub>top</sub> =	19.1100 in	A =	112.2360 in <sup>2</sup>	C <sub>top</sub> =	19.1100 in	A =	112.2360 in <sup>2</sup>
C <sub>bottom</sub> =	19.1100 in	r <sub>x</sub> =	16.0195 in	C <sub>bottom</sub> =	19.1100 in	r <sub>x</sub> =	16.0195 in
J =	66.6728 in <sup>5</sup>	Z =	1707.0446 in <sup>3</sup>	J =	66.6728 in <sup>5</sup>	Z =	1707.0446 in <sup>3</sup>



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Date 3/12/2012  
Date 3/20/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web Plate		31.5252	8.3275	262.5261	2.3461	0.0000	0.0000	2.3461
2	Flange Plates		55.9608	8.3275	466.0136	1293.5760	0.0000	0.0000	1293.5760
3	Cover Plate		24.7500	8.3275	206.1056	561.5156	0.0000	0.0000	561.5156
<b>Total</b>			<b>112.24</b>		<b>934.65</b>	<b>1857.44</b>		<b>0.00</b>	<b>1857.44</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties				
x-bar =	8.3275	in	S <sub>right</sub> =	223.05 in <sup>3</sup>	x-bar =	8.3275	in	S <sub>right</sub> =	223.05 in <sup>3</sup>
I <sub>y</sub> =	1857.44	in <sup>4</sup>	S <sub>left</sub> =	223.05 in <sup>3</sup>	I <sub>y</sub> =	1857.44	in <sup>4</sup>	S <sub>left</sub> =	223.05 in <sup>3</sup>
C <sub>right</sub> =	8.3275	in	A =	112.2360 in <sup>2</sup>	C <sub>right</sub> =	8.3275	in	A =	112.2360 in <sup>2</sup>
C <sub>left</sub> =	8.3275	in	r <sub>y</sub> =	4.0681 in	C <sub>left</sub> =	8.3275	in	r <sub>y</sub> =	4.0681 in



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Date 3/12/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

**Rolled Beam**

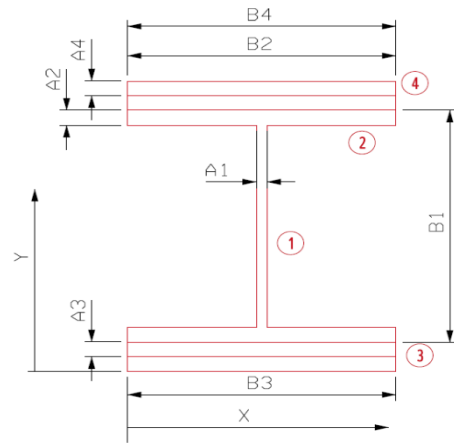
- $A_1 = t_w = 0.9450$  in
- $A_2 = t_f = 1.6800$  in
- $B_1 = d = 36.7200$  in
- $B_2 = b_f = 16.6550$  in

**Inner Cover Plate**

- $A_3 = t = 1.3750$  in
- $B_3 = b = 16.5000$  in

**Outer Cover Plate**

- $A_4 = t = 0.5000$  in
- $B_4 = b = 16.0000$  in



\*Outer Plate must be smaller than the inner plate

**Girder 14 & 15 Mid Span**  
**3 Cover Plates T&B**

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web Plate		31.5252	20.2350	637.9124	2923.6723	0.0000	0.0000	2923.6723
2	Top Flange		27.9804	37.7550	1056.4000	6.5810	17.5200	8588.5950	8595.1760
	Bottom Flange		27.9804	2.7150	75.9668	6.5810	17.5200	8588.5950	8595.1760
3	Top Inner Plate		22.6875	39.2825	891.2217	3.5745	19.0475	8231.1896	8234.7641
	Bottom Inner Plate		22.6875	1.1875	26.9414	3.5745	19.0475	8231.1896	8234.7641
4	Top Outer Plate		8.0000	40.2200	321.7600	0.1667	19.9850	3195.2018	3195.3685
	Bottom Outer Plate		8.0000	0.2500	2.0000	0.1667	19.9850	3195.2018	3195.3685
<b>Total</b>			<b>148.86</b>		<b>3012.20</b>	<b>2944.32</b>		<b>40029.97</b>	<b>42974.29</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	20.2350 in	S <sub>top</sub> =	2123.76 in <sup>3</sup>	y-bar =	20.2350 in	S <sub>top</sub> =	2123.76 in <sup>3</sup>
I <sub>x</sub> =	42974.29 in <sup>4</sup>	S <sub>bottom</sub> =	2123.76 in <sup>3</sup>	I <sub>x</sub> =	42974.29 in <sup>4</sup>	S <sub>bottom</sub> =	2123.76 in <sup>3</sup>
C <sub>top</sub> =	20.2350 in	A =	148.8610 in <sup>2</sup>	C <sub>top</sub> =	20.2350 in	A =	148.8610 in <sup>2</sup>
C <sub>bottom</sub> =	20.2350 in	r <sub>x</sub> =	16.9908 in	C <sub>bottom</sub> =	20.2350 in	r <sub>x</sub> =	16.9908 in
J =	91.9612 in <sup>3</sup>	Z =	2435.275 in <sup>3</sup>	J =	91.9612 in <sup>3</sup>	Z =	2435.275 in <sup>3</sup>



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Date 3/12/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

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Date 3/12/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web Plate		31.5252	8.3275	262.5261	2.3461	0.0000	0.0000	2.3461
2	Flange Plates		55.9608	8.3275	466.0136	1293.5760	0.0000	0.0000	1293.5760
3	Inner Cover Plate		45.3750	8.3275	377.8603	1029.4453	0.0000	0.0000	1029.4453
3	Outer Cover Plate		16.0000	8.3275	133.2400	341.3333	0.0000	0.0000	341.3333
<b>Total</b>			<b>148.86</b>		<b>1239.64</b>	<b>2666.70</b>		<b>0.00</b>	<b>2666.70</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	8.3275	in	S <sub>right</sub> = 320.23 in <sup>3</sup>	x-bar =	8.3275	in	S <sub>right</sub> = 320.23 in <sup>3</sup>
I <sub>y</sub> =	2666.70	in <sup>4</sup>	S <sub>left</sub> = 320.23 in <sup>3</sup>	I <sub>y</sub> =	2666.70	in <sup>4</sup>	S <sub>left</sub> = 320.23 in <sup>3</sup>
C <sub>right</sub> =	8.3275	in	A = 148.8610 in <sup>2</sup>	C <sub>right</sub> =	8.3275	in	A = 148.8610 in <sup>2</sup>
C <sub>left</sub> =	8.3275	in	r <sub>y</sub> = 4.2325 in	C <sub>left</sub> =	8.3275	in	r <sub>y</sub> = 4.2325 in



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Date 3/20/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

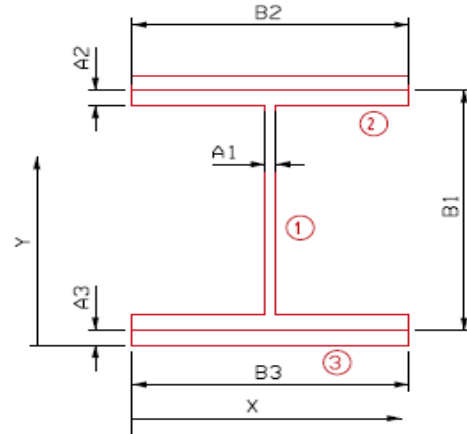
**Element Dimensions (without Section Losses):**

Rolled Beam

- $A_1 = t_w = 0.9450$  in
- $A_2 = t_f = 1.6800$  in
- $B_1 = d = 36.7200$  in
- $B_2 = b_f = 16.6550$  in

Cover Plate

- $A_3 = t = 0.7500$  in
- $B_3 = b = 16.5000$  in



**Girder 14 & 15 Quater Span  
1 Cover Plate T&B**

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web Plate	31.5252	19.1100	602.4466	2923.6723	0.0000	0.0000	2923.6723
2	Left Flange	27.9804	1.5900	44.4888	6.5810	17.5200	8588.5950	8595.1760
	Right Flange	27.9804	36.6300	1024.9221	6.5810	17.5200	8588.5950	8595.1760
3	Left Plate	12.3750	0.3750	4.6406	0.5801	18.7350	4343.6278	4344.2079
	Right Plate	12.3750	37.8450	468.3319	0.5801	18.7350	4343.6278	4344.2079
<b>Total</b>		<b>112.24</b>		<b>2144.83</b>	<b>2937.99</b>		<b>25864.45</b>	<b>28802.44</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	19.1100 in	$S_{top} =$	1507.19 in <sup>3</sup>	y-bar =	19.1100 in	$S_{top} =$	1507.19 in <sup>3</sup>
$I_x =$	28802.44 in <sup>4</sup>	$S_{bott.} =$	1507.19 in <sup>3</sup>	$I_x =$	28802.44 in <sup>4</sup>	$S_{bott.} =$	1507.19 in <sup>3</sup>
$C_{top} =$	19.1100 in	A =	112.2360 in <sup>2</sup>	$C_{top} =$	19.1100 in	A =	112.2360 in <sup>2</sup>
$C_{bottom} =$	19.1100 in	$r_x =$	16.0195 in	$C_{bottom} =$	19.1100 in	$r_x =$	16.0195 in
J =	66.6728 in <sup>5</sup>	Z =	1707.0446 in <sup>3</sup>	Z =	1707.0446 in <sup>3</sup>		



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Date 3/12/2012  
Date 3/20/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web Plate	31.5252	8.3275	262.5261	2.3461	0.0000	0.0000	2.3461
2	Flange Plates	55.9608	8.3275	466.0136	1293.5760	0.0000	0.0000	1293.5760
3	Cover Plate	24.7500	8.3275	206.1056	561.5156	0.0000	0.0000	561.5156
<b>Total</b>		<b>112.24</b>		<b>934.65</b>	<b>1857.44</b>		<b>0.00</b>	<b>1857.44</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	8.3275	in	S <sub>right</sub> = 223.05 in <sup>3</sup>	x-bar =	8.3275	in	S <sub>right</sub> = 223.05 in <sup>3</sup>
I <sub>y</sub> =	1857.44	in <sup>4</sup>	S <sub>left</sub> = 223.05 in <sup>3</sup>	I <sub>y</sub> =	1857.44	in <sup>4</sup>	S <sub>left</sub> = 223.05 in <sup>3</sup>
C <sub>right</sub> =	8.3275	in	A = 112.2360 in <sup>2</sup>	C <sub>right</sub> =	8.3275	in	A = 112.2360 in <sup>2</sup>
C <sub>left</sub> =	8.3275	in	r <sub>y</sub> = 4.0681 in	C <sub>left</sub> =	8.3275	in	r <sub>y</sub> = 4.0681 in



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Date 3/12/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

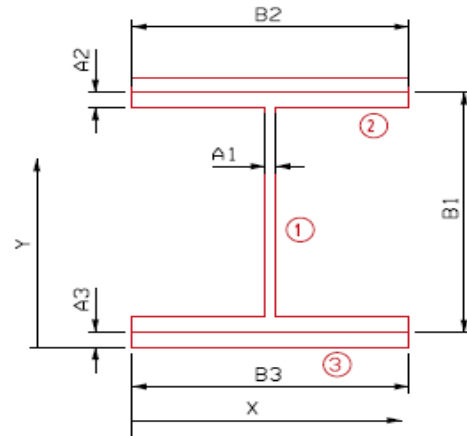
**Element Dimensions (without Section Losses):**

Rolled Beam

- $A_1 = t_w = 0.7630$  in
- $A_2 = t_f = 1.2600$  in
- $B_1 = d = 35.8800$  in
- $B_2 = b_f = 16.4730$  in

Cover Plate

- $A_3 = t = 0.0000$  in
- $B_3 = b = 0.0000$  in



Girder 15 & 16

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web Plate		25.4537	17.9400	456.6390	2360.5946	0.0000	0.0000	2360.5946
2	Left Flange		20.7560	0.6300	13.0763	2.7460	17.3100	6219.2409	6221.9869
	Right Flange		20.7560	35.2500	731.6483	2.7460	17.3100	6219.2409	6221.9869
3	Left Plate		0.0000	0.0000	0.0000	0.0000	17.9400	0.0000	0.0000
	Right Plate		0.0000	35.8800	0.0000	0.0000	17.9400	0.0000	0.0000
<b>Total</b>			<b>66.97</b>		<b>1201.36</b>	<b>2366.09</b>		<b>12438.48</b>	<b>14804.57</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	16.4730	0.0625	-1.0296	0.0313	-0.0322	-0.0003	18.1884	-340.5972	-340.5976
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>-1.03</b>		<b>-0.03</b>	<b>0.00</b>		<b>-340.60</b>	<b>-340.60</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	17.9400 in	S <sub>top</sub> =	825.23 in <sup>3</sup>	y-bar =	18.2196 in	S <sub>top</sub> =	819.01 in <sup>3</sup>
I <sub>x</sub> =	14804.57 in <sup>4</sup>	S <sub>bottom</sub> =	825.23 in <sup>3</sup>	I <sub>x</sub> =	14463.97 in <sup>4</sup>	S <sub>bottom</sub> =	793.87 in <sup>3</sup>
C <sub>top</sub> =	17.9400 in	A =	66.9656 in <sup>2</sup>	C <sub>top</sub> =	17.6604 in	A =	65.9361 in <sup>2</sup>
C <sub>bottom</sub> =	17.9400 in	r <sub>x</sub> =	14.8687 in	C <sub>bottom</sub> =	18.2196 in	r <sub>x</sub> =	14.8109 in
J =	26.9076 in <sup>3</sup>	Z =	930.85572 in <sup>3</sup>	Z =	930.85572 in <sup>3</sup>		





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Date 3/12/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1	Web Plate	25.4537	8.2365	209.6492	1.2349	0.0000	0.0000	1.2349	
2	Flange Plates	41.5120	8.2365	341.9133	938.7229	0.0000	0.0000	938.7229	
3	Cover Plate	0.0000	8.2365	0.0000	0.0000	0.0000	0.0000	0.0000	
<b>Total</b>		<b>66.97</b>		<b>551.56</b>	<b>939.96</b>		<b>0.00</b>	<b>939.96</b>	
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>	
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	
1	0.0625	16.4730	-1.0296	8.2365	-8.4800	-23.2818	0.0000	0.0000	-23.2818
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
<b>Total</b>		<b>-1.03</b>		<b>-8.48</b>	<b>-23.28</b>		<b>0.00</b>	<b>-23.28</b>	

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	8.2365	in	S <sub>right</sub> = 114.12 in <sup>3</sup>	x-bar =	8.2365	in	S <sub>right</sub> = 111.29 in <sup>3</sup>
I <sub>y</sub> =	939.96	in <sup>4</sup>	S <sub>left</sub> = 114.12 in <sup>3</sup>	I <sub>y</sub> =	916.68	in <sup>4</sup>	S <sub>left</sub> = 111.29 in <sup>3</sup>
C <sub>right</sub> =	8.2365	in	A = 66.9656 in <sup>2</sup>	C <sub>right</sub> =	8.2365	in	A = 65.9361 in <sup>2</sup>
C <sub>left</sub> =	8.2365	in	r <sub>y</sub> = 3.7465 in	C <sub>left</sub> =	8.2365	in	r <sub>y</sub> = 3.7286 in



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Date 3/12/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

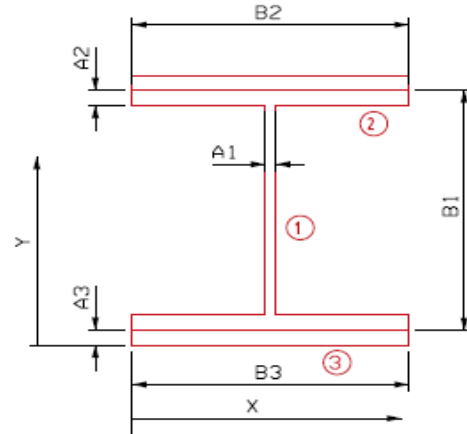
**Element Dimensions (without Section Losses):**

Rolled Beam

- $A_1 = t_w = 0.7630$  in
- $A_2 = t_f = 1.2600$  in
- $B_1 = d = 35.8800$  in
- $B_2 = b_f = 16.4730$  in

Cover Plate

- $A_3 = t = 0.0000$  in
- $B_3 = b = 0.0000$  in



Girder 15 & 16

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web Plate		25.4537	17.9400	456.6390	2360.5946	0.0000	0.0000	2360.5946
2	Left Flange		20.7560	0.6300	13.0763	2.7460	17.3100	6219.2409	6221.9869
	Right Flange		20.7560	35.2500	731.6483	2.7460	17.3100	6219.2409	6221.9869
3	Left Plate		0.0000	0.0000	0.0000	0.0000	17.9400	0.0000	0.0000
	Right Plate		0.0000	35.8800	0.0000	0.0000	17.9400	0.0000	0.0000
<b>Total</b>			<b>66.97</b>		<b>1201.36</b>	<b>2366.09</b>		<b>12438.48</b>	<b>14804.57</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	17.9400	in	S <sub>top</sub> = 825.23 in <sup>3</sup>	y-bar =	17.9400	in	S <sub>top</sub> = 825.23 in <sup>3</sup>
I <sub>x</sub> =	14804.57	in <sup>4</sup>	S <sub>bottom</sub> = 825.23 in <sup>3</sup>	I <sub>x</sub> =	14804.57	in <sup>4</sup>	S <sub>bottom</sub> = 825.23 in <sup>3</sup>
C <sub>top</sub> =	17.9400	in	A = 66.9656 in <sup>2</sup>	C <sub>top</sub> =	17.9400	in	A = 66.9656 in <sup>2</sup>
C <sub>bottom</sub> =	17.9400	in	r <sub>x</sub> = 14.8687 in	C <sub>bottom</sub> =	17.9400	in	r <sub>x</sub> = 14.8687 in
J =	26.9076	in <sup>3</sup>	Z = 1143.1394 in <sup>3</sup>				Z = 1143.1394 in <sup>3</sup>



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Date 3/12/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web Plate		25.4537	8.2365	209.6492	1.2349	0.0000	0.0000	1.2349
2	Flange Plates		41.5120	8.2365	341.9133	938.7229	0.0000	0.0000	938.7229
3	Cover Plate		0.0000	8.2365	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>66.97</b>		<b>551.56</b>	<b>939.96</b>		<b>0.00</b>	<b>939.96</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	8.2365	in	S <sub>right</sub> =	114.12	in <sup>3</sup>	x-bar =	8.2365	in	S <sub>right</sub> =	114.12	in <sup>3</sup>
I <sub>y</sub> =	939.96	in <sup>4</sup>	S <sub>left</sub> =	114.12	in <sup>3</sup>	I <sub>y</sub> =	939.96	in <sup>4</sup>	S <sub>left</sub> =	114.12	in <sup>3</sup>
C <sub>right</sub> =	8.2365	in	A =	66.9656	in <sup>2</sup>	C <sub>right</sub> =	8.2365	in	A =	66.9656	in <sup>2</sup>
C <sub>left</sub> =	8.2365	in	r <sub>y</sub> =	3.7465	in	C <sub>left</sub> =	8.2365	in	r <sub>y</sub> =	3.7465	in



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Date 3/12/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

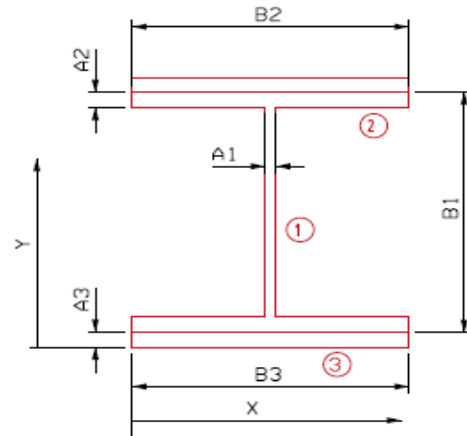
**Element Dimensions (without Section Losses):**

Rolled Beam

- $A_1 = t_w = 0.9450$  in
- $A_2 = t_f = 1.6800$  in
- $B_1 = d = 36.7200$  in
- $B_2 = b_f = 16.6550$  in

Cover Plate

- $A_3 = t = 0.7500$  in
- $B_3 = b = 16.5000$  in



Girder 16 & 17 End Span

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web Plate		31.5252	19.1100	602.4466	2923.6723	0.0000	0.0000	2923.6723
2	Left Flange		27.9804	1.5900	44.4888	6.5810	17.5200	8588.5950	8595.1760
	Right Flange		27.9804	36.6300	1024.9221	6.5810	17.5200	8588.5950	8595.1760
3	Left Plate		12.3750	0.3750	4.6406	0.5801	18.7350	4343.6278	4344.2079
	Right Plate		12.3750	37.8450	468.3319	0.5801	18.7350	4343.6278	4344.2079
<b>Total</b>			<b>112.24</b>		<b>2144.83</b>	<b>2937.99</b>		<b>25864.45</b>	<b>28802.44</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	19.1100 in	$S_{top} =$	1507.19 in <sup>3</sup>	y-bar =	19.1100 in	$S_{top} =$	1507.19 in <sup>3</sup>
$I_x =$	28802.44 in <sup>4</sup>	$S_{bott.} =$	1507.19 in <sup>3</sup>	$I_x =$	28802.44 in <sup>4</sup>	$S_{bott.} =$	1507.19 in <sup>3</sup>
$C_{top} =$	19.1100 in	A =	112.2360 in <sup>2</sup>	$C_{top} =$	19.1100 in	A =	112.2360 in <sup>2</sup>
$C_{bottom} =$	19.1100 in	$r_x =$	16.0195 in	$C_{bottom} =$	19.1100 in	$r_x =$	16.0195 in
J =	66.6728 in <sup>3</sup>	Z =	1707.0446 in <sup>3</sup>	Z =	1707.0446 in <sup>3</sup>		



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Date 3/12/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web Plate	31.5252	8.3275	262.5261	2.3461	0.0000	0.0000	2.3461
2	Flange Plates	55.9608	8.3275	466.0136	1293.5760	0.0000	0.0000	1293.5760
3	Cover Plate	24.7500	8.3275	206.1056	561.5156	0.0000	0.0000	561.5156
<b>Total</b>		<b>112.24</b>		<b>934.65</b>	<b>1857.44</b>		<b>0.00</b>	<b>1857.44</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	8.3275	in	S <sub>right</sub> = 223.05 in <sup>3</sup>	x-bar =	8.3275	in	S <sub>right</sub> = 223.05 in <sup>3</sup>
I <sub>y</sub> =	1857.44	in <sup>4</sup>	S <sub>left</sub> = 223.05 in <sup>3</sup>	I <sub>y</sub> =	1857.44	in <sup>4</sup>	S <sub>left</sub> = 223.05 in <sup>3</sup>
C <sub>right</sub> =	8.3275	in	A = 112.2360 in <sup>2</sup>	C <sub>right</sub> =	8.3275	in	A = 112.2360 in <sup>2</sup>
C <sub>left</sub> =	8.3275	in	r <sub>y</sub> = 4.0681 in	C <sub>left</sub> =	8.3275	in	r <sub>y</sub> = 4.0681 in



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Date 3/12/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

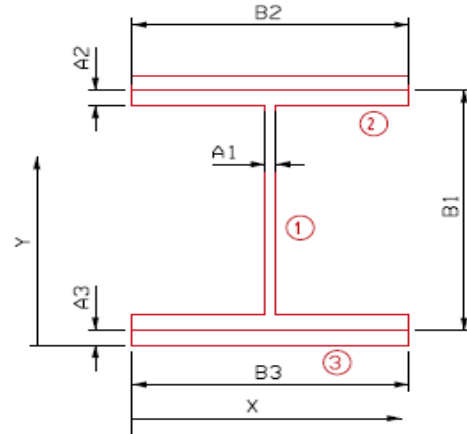
**Element Dimensions (without Section Losses):**

Rolled Beam

- $A_1 = t_w = 0.9450$  in
- $A_2 = t_f = 1.6800$  in
- $B_1 = d = 36.7200$  in
- $B_2 = b_f = 16.6550$  in

Cover Plate

- $A_3 = t = 1.3750$  in
- $B_3 = b = 16.5000$  in



Girder 16 & 17 Mid Span

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web Plate		31.5252	19.7350	622.1498	2923.6723	0.0000	0.0000	2923.6723
2	Left Flange		27.9804	2.2150	61.9766	6.5810	17.5200	8588.5950	8595.1760
	Right Flange		27.9804	37.2550	1042.4098	6.5810	17.5200	8588.5950	8595.1760
3	Left Plate		22.6875	0.6875	15.5977	3.5745	19.0475	8231.1896	8234.7641
	Right Plate		22.6875	38.7825	879.8780	3.5745	19.0475	8231.1896	8234.7641
<b>Total</b>			<b>132.86</b>		<b>2622.01</b>	<b>2943.98</b>		<b>33639.57</b>	<b>36583.55</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	19.7350	in	S <sub>top</sub> = 1853.74 in <sup>3</sup>	y-bar =	19.7350	in	S <sub>top</sub> = 1853.74 in <sup>3</sup>
I <sub>x</sub> =	36583.55	in <sup>4</sup>	S <sub>bottom</sub> = 1853.74 in <sup>3</sup>	I <sub>x</sub> =	36583.55	in <sup>4</sup>	S <sub>bottom</sub> = 1853.74 in <sup>3</sup>
C <sub>top</sub> =	19.7350	in	A = 132.8610 in <sup>2</sup>	C <sub>top</sub> =	19.7350	in	A = 132.8610 in <sup>2</sup>
C <sub>bottom</sub> =	19.7350	in	r <sub>x</sub> = 16.5937 in	C <sub>bottom</sub> =	19.7350	in	r <sub>x</sub> = 16.5937 in
J =	90.6279	in <sup>3</sup>	Z = 2437.3612 in <sup>3</sup>				Z = 2437.3612 in <sup>3</sup>



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Date 3/12/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web Plate		31.5252	8.3275	262.5261	2.3461	0.0000	0.0000	2.3461
2	Flange Plates		55.9608	8.3275	466.0136	1293.5760	0.0000	0.0000	1293.5760
3	Cover Plate		45.3750	8.3275	377.8603	1029.4453	0.0000	0.0000	1029.4453
<b>Total</b>			<b>132.86</b>		<b>1106.40</b>	<b>2325.37</b>		<b>0.00</b>	<b>2325.37</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	8.3275	in	S <sub>right</sub> = 279.24 in <sup>3</sup>	x-bar =	8.3275	in	S <sub>right</sub> = 279.24 in <sup>3</sup>
I <sub>y</sub> =	2325.37	in <sup>4</sup>	S <sub>left</sub> = 279.24 in <sup>3</sup>	I <sub>y</sub> =	2325.37	in <sup>4</sup>	S <sub>left</sub> = 279.24 in <sup>3</sup>
C <sub>right</sub> =	8.3275	in	A = 132.8610 in <sup>2</sup>	C <sub>right</sub> =	8.3275	in	A = 132.8610 in <sup>2</sup>
C <sub>left</sub> =	8.3275	in	r <sub>y</sub> = 4.1836 in	C <sub>left</sub> =	8.3275	in	r <sub>y</sub> = 4.1836 in



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Date 3/12/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

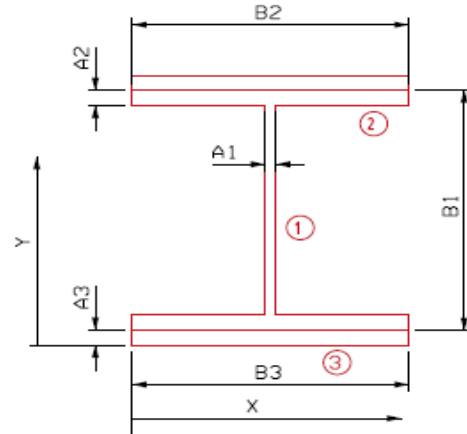
**Element Dimensions (without Section Losses):**

Rolled Beam

- $A_1 = t_w = 0.9450$  in
- $A_2 = t_f = 1.6800$  in
- $B_1 = d = 36.7200$  in
- $B_2 = b_f = 16.6550$  in

Cover Plate

- $A_3 = t = 1.3750$  in
- $B_3 = b = 16.5000$  in



Girder 16 & 17 Mid Span

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web Plate		31.5252	19.7350	622.1498	2923.6723	0.0000	0.0000	2923.6723
2	Left Flange		27.9804	2.2150	61.9766	6.5810	17.5200	8588.5950	8595.1760
	Right Flange		27.9804	37.2550	1042.4098	6.5810	17.5200	8588.5950	8595.1760
3	Left Plate		22.6875	0.6875	15.5977	3.5745	19.0475	8231.1896	8234.7641
	Right Plate		22.6875	38.7825	879.8780	3.5745	19.0475	8231.1896	8234.7641
<b>Total</b>			<b>132.86</b>		<b>2622.01</b>	<b>2943.98</b>		<b>33639.57</b>	<b>36583.55</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	8.2500	0.0625	-0.5156	0.0313	-0.0161	-0.0002	19.7805	-201.7480	-201.7482
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>-0.52</b>		<b>-0.02</b>	<b>0.00</b>		<b>-201.75</b>	<b>-201.75</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	19.7350	in	$S_{top} = 1853.74$	in <sup>3</sup>	y-bar =	19.8118	in	$S_{top} = 1850.72$	in <sup>3</sup>		
$I_x =$	36583.55	in <sup>4</sup>	$S_{bott.} = 1853.74$	in <sup>3</sup>	$I_x =$	36381.80	in <sup>4</sup>	$S_{bott.} = 1836.37$	in <sup>3</sup>		
$C_{top} =$	19.7350	in	A =	132.8610	in <sup>2</sup>	$C_{top} =$	19.6582	in	A =	132.3454	in <sup>2</sup>
$C_{bottom} =$	19.7350	in	$r_x =$	16.5937	in	$C_{bottom} =$	19.8118	in	$r_x =$	16.5801	in
J =	90.6279	in <sup>3</sup>	Z =	2107.6337	in <sup>3</sup>	Z =	2107.6337	in <sup>3</sup>			





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Date 3/12/2012  
Date 3/28/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web Plate		31.5252	8.3275	262.5261	2.3461	0.0000	0.0000	2.3461
2	Flange Plates		55.9608	8.3275	466.0136	1293.5760	0.0000	0.0000	1293.5760
3	Cover Plate		45.3750	8.3275	377.8603	1029.4453	0.0000	0.0000	1029.4453
<b>Total</b>			<b>132.86</b>		<b>1106.40</b>	<b>2325.37</b>		<b>0.00</b>	<b>2325.37</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0625	8.2500	-0.5156	4.1250	-2.1270	-2.9246	4.2189	-9.1776	-12.1021
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>-0.52</b>		<b>-2.13</b>	<b>-2.92</b>		<b>-9.18</b>	<b>-12.10</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	8.3275	in	S <sub>right</sub> = 279.24 in <sup>3</sup>	x-bar =	8.3439	in	S <sub>right</sub> = 277.79 in <sup>3</sup>
I <sub>y</sub> =	2325.37	in <sup>4</sup>	S <sub>left</sub> = 279.24 in <sup>3</sup>	I <sub>y</sub> =	2313.27	in <sup>4</sup>	S <sub>left</sub> = 277.24 in <sup>3</sup>
C <sub>right</sub> =	8.3275	in	A = 132.8610 in <sup>2</sup>	C <sub>right</sub> =	8.3275	in	A = 132.3454 in <sup>2</sup>
C <sub>left</sub> =	8.3275	in	r <sub>y</sub> = 4.1836 in	C <sub>left</sub> =	8.3439	in	r <sub>y</sub> = 4.1808 in



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Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.5000$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

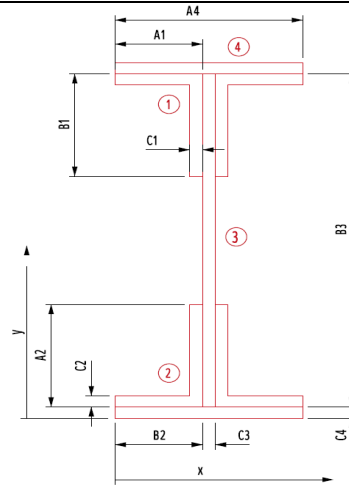
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.5000$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 35.4000$  in  
 $d_o = 37.5000$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in



**Girder 17-18 Section 1**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1	Horizontal Leg	6.0000	35.6500	213.9000	0.1250	17.4500	1827.0150	1827.1400	
	Vertical Leg	5.5000	32.6500	179.5750	13.8646	14.4500	1148.4138	1162.2783	
2	Horizontal Leg	6.0000	0.7500	4.5000	0.1250	17.4500	1827.0150	1827.1400	
	Vertical Leg	5.5000	3.7500	20.6250	13.8646	14.4500	1148.4138	1162.2783	
3	Web Plate	17.7000	18.2000	322.1400	1848.4110	0.0000	0.0000	1848.4110	
4	Cover Plate Top	8.0000	36.1500	289.2000	0.1667	17.9500	2577.6200	2577.7867	
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	17.9500	2577.6200	2577.7867	
<b>Total</b>		<b>56.70</b>		<b>1031.94</b>	<b>1876.72</b>		<b>11106.10</b>	<b>12982.82</b>	
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>	
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	
1	0.0625	5.5000	-0.3438	3.7500	-1.2891	-0.8665	14.5654	-72.9271	
2	0.1250	4.0000	-0.5000	8.5000	-4.2500	-0.6667	9.8154	-48.8379	
3	0.0625	5.5000	-0.3438	3.7500	-1.2891	-0.8665	14.5654	-72.9271	
4	0.1250	12.0000	-1.5000	23.9000	-35.8500	-18.0000	5.5846	-64.7812	
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
<b>Total</b>			<b>-2.69</b>		<b>-42.68</b>	<b>-20.40</b>		<b>-240.81</b>	<b>-261.21</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	18.2000	in	S <sub>top</sub> = 713.34 in <sup>3</sup>	y-bar =	18.3154	in	S <sub>top</sub> = 703.45 in <sup>3</sup>
I <sub>x</sub> =	12982.82	in <sup>4</sup>	S <sub>bottom</sub> = 713.34 in <sup>3</sup>	I <sub>x</sub> =	12721.61	in <sup>4</sup>	S <sub>bottom</sub> = 694.58 in <sup>3</sup>
C <sub>top</sub> =	18.2000	in	A = 56.7000 in <sup>2</sup>	C <sub>top</sub> =	18.0846	in	A = 54.0125 in <sup>2</sup>
C <sub>bottom</sub> =	18.2000	in	r <sub>x</sub> = 15.1319 in	C <sub>bottom</sub> =	18.3154	in	r <sub>x</sub> = 15.3470 in
J =	4.7250		Z = 812.1950 in <sup>3</sup>				Z = 785.9476 in <sup>3</sup>



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Date 3/21/2012  
 Date 3/30/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448
1 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448
2 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448
2 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448
3	Web Plate	17.7000	8.0000	141.6000	0.3688	0.0000	0.0000	0.3688
4	Cover Plate	16.0000	8.0000	128.0000	341.3333	0.0000	0.0000	341.3333
<b>Total</b>		<b>56.70</b>		<b>453.60</b>	<b>377.93</b>		<b>129.50</b>	<b>507.43</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	5.5000	0.0625	-0.3438	7.2813	-2.5029	-0.0001	0.7153	-0.1759
2	4.0000	0.1250	-0.5000	7.8125	-3.9063	-0.0007	0.1840	-0.0176
3	5.5000	0.0625	-0.3438	8.7188	-2.9971	-0.0001	0.7222	-0.1793
4	12.0000	0.1250	-1.5000	8.1875	-12.2813	-0.0020	0.1910	-0.0567
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>-2.69</b>	<b>-21.69</b>	<b>0.00</b>		<b>-0.43</b>	<b>-0.43</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	8.0000	in	S <sub>right</sub> = 63.43 in <sup>3</sup>	x-bar =	7.9965	in	S <sub>right</sub> = 63.35 in <sup>3</sup>
I <sub>y</sub> =	507.43	in <sup>4</sup>	S <sub>left</sub> = 63.43 in <sup>3</sup>	I <sub>y</sub> =	507.00	in <sup>4</sup>	S <sub>left</sub> = 63.40 in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A = 56.7000 in <sup>2</sup>	C <sub>right</sub> =	8.0035	in	A = 54.0125 in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> = 2.9916 in	C <sub>left</sub> =	7.9965	in	r <sub>y</sub> = 3.0638 in

Non-composite Capacities*		
	AB	AI
<b>M</b>	2233.54 k-ft	2161.36 k-ft
<b>V</b>	338.78 k	287.34 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.5000$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

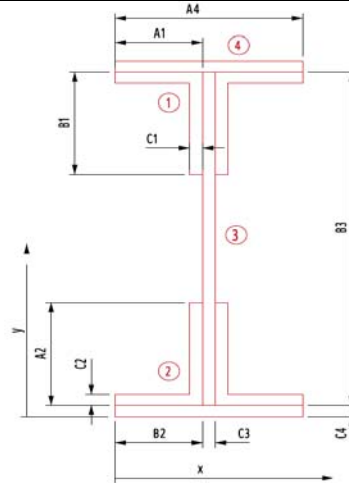
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.5000$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 36.6000$  in  
 $d_o = 42.0000$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in



**Girder 17-18 Section 2**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	6.0000	36.8500	221.1000	0.1250	18.0500	1954.8150	1954.9400
	Vertical Leg	5.5000	33.8500	186.1750	13.8646	15.0500	1245.7638	1259.6283
2	Horizontal Leg	6.0000	0.7500	4.5000	0.1250	18.0500	1954.8150	1954.9400
	Vertical Leg	5.5000	3.7500	20.6250	13.8646	15.0500	1245.7638	1259.6283
3	Web Plate	18.3000	18.8000	344.0400	2042.8290	0.0000	0.0000	2042.8290
4	Cover Plate Top	8.0000	37.3500	298.8000	0.1667	18.5500	2752.8200	2752.9867
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	18.5500	2752.8200	2752.9867
<b>Total</b>		<b>57.30</b>		<b>1077.24</b>	<b>2071.14</b>		<b>11906.80</b>	<b>13977.94</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	18.8000	in	S <sub>top</sub> =	743.51	in <sup>3</sup>	y-bar =	18.8000	in	S <sub>top</sub> =	743.51	in <sup>3</sup>
I <sub>x</sub> =	13977.94	n <sup>4</sup>	S <sub>bott.</sub> =	743.51	in <sup>3</sup>	I <sub>x</sub> =	13977.94	in <sup>4</sup>	S <sub>bott.</sub> =	743.51	in <sup>3</sup>
C <sub>top</sub> =	18.8000	in	A =	57.3000	in <sup>2</sup>	C <sub>top</sub> =	18.8000	in	A =	57.3000	in <sup>2</sup>
C <sub>bottom</sub> =	18.8000	in	r <sub>x</sub> =	15.6187	in	C <sub>bottom</sub> =	18.8000	in	r <sub>x</sub> =	15.6187	in
J =	4.7750		Z =	846.3950	in <sup>3</sup>	Z =	846.3950	in <sup>3</sup>			



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Date 3/21/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448
1 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448
2 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448
2 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448
3	Web Plate	18.3000	8.0000	146.4000	0.3813	0.0000	0.0000	0.3813
4	Cover Plate	16.0000	8.0000	128.0000	341.3333	0.0000	0.0000	341.3333
<b>Total</b>		<b>57.30</b>		<b>458.40</b>	<b>377.94</b>		<b>129.50</b>	<b>507.44</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	63.43	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	63.43	in <sup>3</sup>
I <sub>y</sub> =	507.44	in <sup>4</sup>	S <sub>left</sub> =	63.43	in <sup>3</sup>	I <sub>y</sub> =	507.44	in <sup>4</sup>	S <sub>left</sub> =	63.43	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	57.3000	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	57.3000	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.9759	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.9759	in

Non-composite Capacities*		
	AB	AI
M	2327.59 k-ft	2327.59 k-ft
V	350.26 k	350.26 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
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AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.5000$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.5000$  in  
 $A_2 = l_v = 6.0000$  in

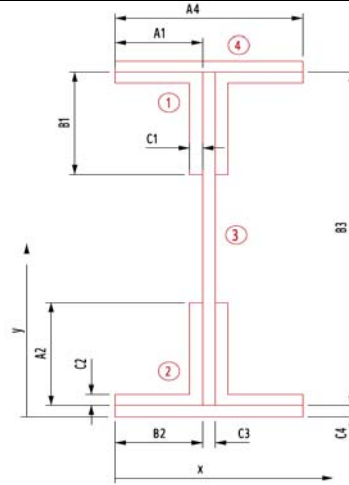
Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 41.0400$  in

$d_o = 42.8750$  in  
 $d_o =$  stiffener spacing for shear check  
 Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in



**Girder 17-18 Section 3**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	6.0000	41.2900	247.7400	0.1250	20.2700	2465.2374	2465.3624
	Vertical Leg	5.5000	38.2900	210.5950	13.8646	17.2700	1640.3910	1654.2555
2	Horizontal Leg	6.0000	0.7500	4.5000	0.1250	20.2700	2465.2374	2465.3624
	Vertical Leg	5.5000	3.7500	20.6250	13.8646	17.2700	1640.3910	1654.2555
3	Web Plate	20.5200	21.0200	431.3304	2880.1215	0.0000	0.0000	2880.1215
4	Cover Plate Top	8.0000	41.7900	334.3200	0.1667	20.7700	3451.1432	3451.3099
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	20.7700	3451.1432	3451.3099
<b>Total</b>		<b>59.52</b>		<b>1251.11</b>	<b>2908.43</b>		<b>15113.54</b>	<b>18021.98</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	21.0200 in	S <sub>top</sub> =	857.37 in <sup>3</sup>	y-bar =	21.0200 in	S <sub>top</sub> =	857.37 in <sup>3</sup>
I <sub>x</sub> =	18021.98 in <sup>4</sup>	S <sub>bott.</sub> =	857.37 in <sup>3</sup>	I <sub>x</sub> =	18021.98 in <sup>4</sup>	S <sub>bott.</sub> =	857.37 in <sup>3</sup>
C <sub>top</sub> =	21.0200 in	A =	59.5200 in <sup>2</sup>	C <sub>top</sub> =	21.0200 in	A =	59.5200 in <sup>2</sup>
C <sub>bottom</sub> =	21.0200 in	r <sub>x</sub> =	17.4008 in	C <sub>bottom</sub> =	21.0200 in	r <sub>x</sub> =	17.4008 in
J =	4.9600	Z =	976.0652 in <sup>3</sup>			Z =	976.0652 in <sup>3</sup>



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Date 3/21/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448
1 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448
2 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448
2 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448
3	Web Plate	20.5200	8.0000	164.1600	0.4275	0.0000	0.0000	0.4275
4	Cover Plate	16.0000	8.0000	128.0000	341.3333	0.0000	0.0000	341.3333
<b>Total</b>		<b>59.52</b>		<b>476.16</b>	<b>377.99</b>		<b>129.50</b>	<b>507.49</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	63.44	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	63.44	in <sup>3</sup>
I <sub>y</sub> =	507.49	in <sup>4</sup>	S <sub>left</sub> =	63.44	in <sup>3</sup>	I <sub>y</sub> =	507.49	in <sup>4</sup>	S <sub>left</sub> =	63.44	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	59.5200	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	59.5200	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.9200	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.9200	in

Non-composite Capacities*		
	AB	AI
M	2684.18 k-ft	2684.18 k-ft
V	392.75 k	392.75 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/21/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.5000$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.5000$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

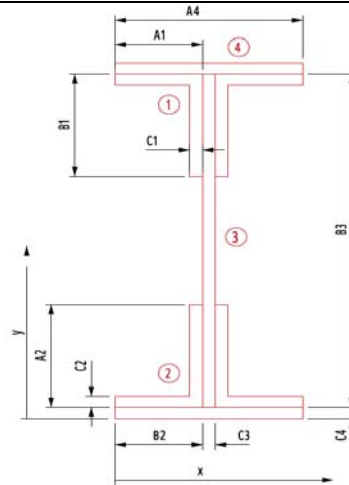
$C_3 = 0.5000$  in  
 $*B_3 = 45.9600$  in

$d_o = n/a$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in



**Girder 17-18 Section 4**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg		6.0000	46.2100	277.2600	0.1250	22.7300	3099.9174	3100.0424
	Vertical Leg		5.5000	43.2100	237.6550	13.8646	19.7300	2141.0010	2154.8655
2	Horizontal Leg		6.0000	0.7500	4.5000	0.1250	22.7300	3099.9174	3100.0424
	Vertical Leg		5.5000	3.7500	20.6250	13.8646	19.7300	2141.0010	2154.8655
3	Web Plate		22.9800	23.4800	539.5704	4045.0959	0.0000	0.0000	4045.0959
4	Cover Plate Top		8.0000	46.7100	373.6800	0.1667	23.2300	4317.0632	4317.2299
	Cover Plate Bottom		8.0000	0.2500	2.0000	0.1667	23.2300	4317.0632	4317.2299
<b>Total</b>			<b>61.98</b>		<b>1455.29</b>	<b>4073.41</b>		<b>19115.96</b>	<b>23189.37</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	23.4800 in	$S_{top} =$	987.62 in <sup>3</sup>	y-bar =	23.4800 in	$S_{top} =$	987.62 in <sup>3</sup>
$I_x =$	23189.37 in <sup>4</sup>	$S_{bott.} =$	987.62 in <sup>3</sup>	$I_x =$	23189.37 in <sup>4</sup>	$S_{bott.} =$	987.62 in <sup>3</sup>
$C_{top} =$	23.4800 in	A =	61.9800 in <sup>2</sup>	$C_{top} =$	23.4800 in	A =	61.9800 in <sup>2</sup>
$C_{bottom} =$	23.4800 in	$r_x =$	19.3428 in	$C_{bottom} =$	23.4800 in	$r_x =$	19.3428 in
J =	5.1650	Z =	1125.5102 in <sup>3</sup>			Z =	1125.5102 in <sup>3</sup>





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Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448
1 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448
2 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448
2 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448
3	Web Plate	22.9800	8.0000	183.8400	0.4788	0.0000	0.0000	0.4788
4	Cover Plate	16.0000	8.0000	128.0000	341.3333	0.0000	0.0000	341.3333
<b>Total</b>		<b>61.98</b>		<b>495.84</b>	<b>378.04</b>		<b>129.50</b>	<b>507.54</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	63.44	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	63.44	in <sup>3</sup>
I <sub>y</sub> =	507.54	in <sup>4</sup>	S <sub>left</sub> =	63.44	in <sup>3</sup>	I <sub>y</sub> =	507.54	in <sup>4</sup>	S <sub>left</sub> =	63.44	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	61.9800	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	61.9800	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.8616	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.8616	in

Non-composite Capacities*		
	AB	AI
M	3095.15 k-ft	3095.15 k-ft
V	439.84 k	439.84 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
------------------	-----------

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.5000$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

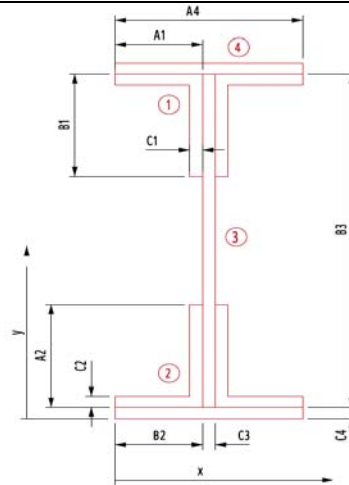
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.5000$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 44.5200$  in  
 $d_o = 44.7500$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in



**Girder 18-19 Section 1**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	6.0000	44.7700	268.6200	0.1250	22.0100	2906.6406	2906.7656
	Vertical Leg	5.5000	41.7700	229.7350	13.8646	19.0100	1987.5906	2001.4551
2	Horizontal Leg	6.0000	0.7500	4.5000	0.1250	22.0100	2906.6406	2906.7656
	Vertical Leg	5.5000	3.7500	20.6250	13.8646	19.0100	1987.5906	2001.4551
3	Web Plate	22.2600	22.7600	506.6376	3676.6664	0.0000	0.0000	3676.6664
4	Cover Plate Top	8.0000	45.2700	362.1600	0.1667	22.5100	4053.6008	4053.7675
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	22.5100	4053.6008	4053.7675
<b>Total</b>		<b>61.26</b>		<b>1394.28</b>	<b>3704.98</b>		<b>17895.66</b>	<b>21600.64</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	22.7600	in	S <sub>top</sub> =	949.06	in <sup>3</sup>	y-bar =	22.7600	in	S <sub>top</sub> =	949.06	in <sup>3</sup>
I <sub>x</sub> =	21600.64	n <sup>4</sup>	S <sub>bott.</sub> =	949.06	in <sup>3</sup>	I <sub>x</sub> =	21600.64	in <sup>4</sup>	S <sub>bott.</sub> =	949.06	in <sup>3</sup>
C <sub>top</sub> =	22.7600	in	A =	61.2600	in <sup>2</sup>	C <sub>top</sub> =	22.7600	in	A =	61.2600	in <sup>2</sup>
C <sub>bottom</sub> =	22.7600	in	r <sub>x</sub> =	18.7778	in	C <sub>bottom</sub> =	22.7600	in	r <sub>x</sub> =	18.7778	in
J =	5.1050		Z =	1081.1438	in <sup>3</sup>				Z =	1081.1438	in <sup>3</sup>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448
1 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448
2 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448
2 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448
3	Web Plate	22.2600	8.0000	178.0800	0.4638	0.0000	0.0000	0.4638
4	Cover Plate	16.0000	8.0000	128.0000	341.3333	0.0000	0.0000	341.3333
<b>Total</b>		<b>61.26</b>		<b>490.08</b>	<b>378.03</b>		<b>129.50</b>	<b>507.53</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	63.44	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	63.44	in <sup>3</sup>
I <sub>y</sub> =	507.53	in <sup>4</sup>	S <sub>left</sub> =	63.44	in <sup>3</sup>	I <sub>y</sub> =	507.53	in <sup>4</sup>	S <sub>left</sub> =	63.44	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	61.2600	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	61.2600	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.8783	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.8783	in

Non-composite Capacities*		
	AB	AI
M	2973.15 k-ft	2973.15 k-ft
V	426.06 k	426.06 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/21/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.5000$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

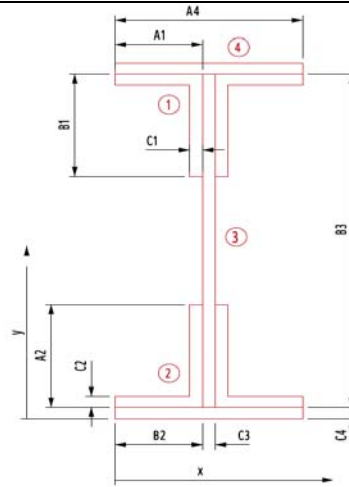
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.5000$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 43.8000$  in  
 $d_o = 44.0000$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 2.1250$  in  
 $A_4 = 16.0000$  in



**Girder 18-19 Section 2**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	6.0000	45.6750	274.0500	0.1250	21.6500	2812.3350	2812.4600
	Vertical Leg	5.5000	42.6750	234.7125	13.8646	18.6500	1913.0238	1926.8883
2	Horizontal Leg	6.0000	2.3750	14.2500	0.1250	21.6500	2812.3350	2812.4600
	Vertical Leg	5.5000	5.3750	29.5625	13.8646	18.6500	1913.0238	1926.8883
3	Web Plate	21.9000	24.0250	526.1475	3501.1530	0.0000	0.0000	3501.1530
4	Cover Plate Top	34.0000	46.9875	1597.5750	12.7943	22.9625	17927.3978	17940.1921
	Cover Plate Bottom	34.0000	1.0625	36.1250	12.7943	22.9625	17927.3978	17940.1921
<b>Total</b>		<b>112.90</b>		<b>2712.42</b>	<b>3554.72</b>		<b>45305.51</b>	<b>48860.23</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	24.0250	in	$S_{top} = 2033.72$	in <sup>3</sup>	y-bar =	24.0250	in	$S_{top} = 2033.72$	in <sup>3</sup>		
$I_x =$	48860.23	n <sup>4</sup>	$S_{bott.} = 2033.72$	in <sup>3</sup>	$I_x =$	48860.23	in <sup>4</sup>	$S_{bott.} = 2033.72$	in <sup>3</sup>		
$C_{top} =$	24.0250	in	A =	112.9000	in <sup>2</sup>	$C_{top} =$	24.0250	in	A =	112.9000	in <sup>2</sup>
$C_{bottom} =$	24.0250	in	$r_x =$	20.8032	in	$C_{bottom} =$	24.0250	in	$r_x =$	20.8032	in
J =	106.0958		Z =	2266.2050	in <sup>3</sup>				Z =	2266.2050	in <sup>3</sup>



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Date 3/21/2012  
 Date 3/30/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448	
1 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448	
2 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448	
2 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448	
3	Web Plate	21.9000	8.0000	175.2000	0.4563	0.0000	0.0000	0.4563	
4	Cover Plate	68.0000	8.0000	544.0000	1450.6667	0.0000	0.0000	1450.6667	
<b>Total</b>		<b>112.90</b>		<b>903.20</b>	<b>1487.35</b>		<b>129.50</b>	<b>1616.85</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	202.11	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	202.11	in <sup>3</sup>
I <sub>y</sub> =	1616.85	in <sup>4</sup>	S <sub>left</sub> =	202.11	in <sup>3</sup>	I <sub>y</sub> =	1616.85	in <sup>4</sup>	S <sub>left</sub> =	202.11	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	112.9000	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	112.9000	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.7843	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.7843	in

Non-composite Capacities*		
	AB	AI
M	6232.06 k-ft	6232.06 k-ft
V	419.17 k	419.17 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.5000$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.5000$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

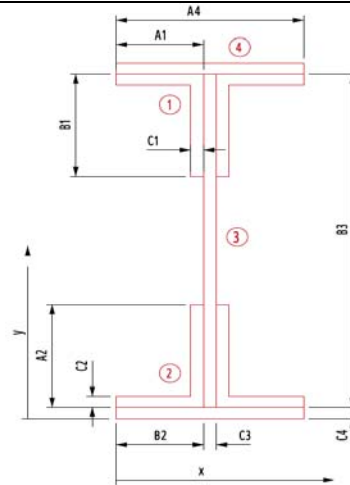
$C_3 = 0.5000$  in  
 $*B_3 = 48.1200$  in

$d_o = 44.0000$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 2.1250$  in  
 $A_4 = 16.0000$  in



**Girder 18-19 Section 3**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	6.0000	49.9950	299.9700	0.1250	23.8100	3401.4966	3401.6216
	Vertical Leg	5.5000	46.9950	258.4725	13.8646	20.8100	2381.8086	2395.6731
2	Horizontal Leg	6.0000	2.3750	14.2500	0.1250	23.8100	3401.4966	3401.6216
	Vertical Leg	5.5000	5.3750	29.5625	13.8646	20.8100	2381.8086	2395.6731
3	Web Plate	24.0600	26.1850	630.0111	4642.6465	0.0000	0.0000	4642.6465
4	Cover Plate Top	34.0000	51.3075	1744.4550	12.7943	25.1225	21458.7602	21471.5545
	Cover Plate Bottom	34.0000	1.0625	36.1250	12.7943	25.1225	21458.7602	21471.5545
<b>Total</b>		<b>115.06</b>		<b>3012.85</b>	<b>4696.21</b>		<b>54484.13</b>	<b>59180.34</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	26.1850	in	S <sub>top</sub> =	2260.09	in <sup>3</sup>	y-bar =	26.1850	in	S <sub>top</sub> =	2260.09	in <sup>3</sup>
I <sub>x</sub> =	59180.34	n <sup>4</sup>	S <sub>bott.</sub> =	2260.09	in <sup>3</sup>	I <sub>x</sub> =	59180.34	in <sup>4</sup>	S <sub>bott.</sub> =	2260.09	in <sup>3</sup>
C <sub>top</sub> =	26.1850	in	A =	115.0600	in <sup>2</sup>	C <sub>top</sub> =	26.1850	in	A =	115.0600	in <sup>2</sup>
C <sub>bottom</sub> =	26.1850	in	r <sub>x</sub> =	22.6791	in	C <sub>bottom</sub> =	26.1850	in	r <sub>x</sub> =	22.6791	in
J =	106.2758		Z =	2512.4018	in <sup>3</sup>				Z =	2512.4018	in <sup>3</sup>



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Date 3/21/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448	
1 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448	
2 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448	
2 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448	
3	Web Plate	24.0600	8.0000	192.4800	0.5013	0.0000	0.0000	0.5013	
4	Cover Plate	68.0000	8.0000	544.0000	1450.6667	0.0000	0.0000	1450.6667	
<b>Total</b>		<b>115.06</b>		<b>920.48</b>	<b>1487.40</b>		<b>129.50</b>	<b>1616.90</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	202.11	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	202.11	in <sup>3</sup>
I <sub>y</sub> =	1616.90	in <sup>4</sup>	S <sub>left</sub> =	202.11	in <sup>3</sup>	I <sub>y</sub> =	1616.90	in <sup>4</sup>	S <sub>left</sub> =	202.11	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	115.0600	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	115.0600	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.7487	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.7487	in

Non-composite Capacities*		
	AB	AI
M	6909.10 k-ft	6909.10 k-ft
V	460.51 k	460.51 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
------------------	-----------

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/21/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.5000$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

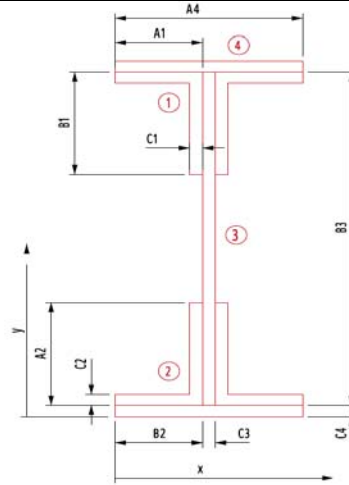
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.5000$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 52.3200$  in  
 $d_o = 48.0000$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in



**Girder 18-19 Section 4**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	6.0000	52.5700	315.4200	0.1250	25.9100	4027.9686	4028.0936
	Vertical Leg	5.5000	49.5700	272.6350	13.8646	22.9100	2886.7746	2900.6391
2	Horizontal Leg	6.0000	0.7500	4.5000	0.1250	25.9100	4027.9686	4028.0936
	Vertical Leg	5.5000	3.7500	20.6250	13.8646	22.9100	2886.7746	2900.6391
3	Web Plate	26.1600	26.6600	697.4256	5967.4936	0.0000	0.0000	5967.4936
4	Cover Plate Top	8.0000	53.0700	424.5600	0.1667	26.4100	5579.9048	5580.0715
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	26.4100	5579.9048	5580.0715
<b>Total</b>		<b>65.16</b>		<b>1737.17</b>	<b>5995.81</b>		<b>24989.30</b>	<b>30985.10</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	26.6600	in	S <sub>top</sub> = 1162.23 in <sup>3</sup>	y-bar =	26.6600	in	S <sub>top</sub> = 1162.23 in <sup>3</sup>
I <sub>x</sub> =	30985.10	n <sup>4</sup>	S <sub>bottom</sub> = 1162.23 in <sup>3</sup>	I <sub>x</sub> =	30985.10	in <sup>4</sup>	S <sub>bottom</sub> = 1162.23 in <sup>3</sup>
C <sub>top</sub> =	26.6600	in	A = 65.1600 in <sup>2</sup>	C <sub>top</sub> =	26.6600	in	A = 65.1600 in <sup>2</sup>
C <sub>bottom</sub> =	26.6600	in	r <sub>x</sub> = 21.8065 in	C <sub>bottom</sub> =	26.6600	in	r <sub>x</sub> = 21.8065 in
J =	5.4300		Z = 1327.6628 in <sup>3</sup>				Z = 1327.6628 in <sup>3</sup>





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Date 3/21/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448
1 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448
2 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448
2 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448
3	Web Plate	26.1600	8.0000	209.2800	0.5450	0.0000	0.0000	0.5450
4	Cover Plate	16.0000	8.0000	128.0000	341.3333	0.0000	0.0000	341.3333
<b>Total</b>		<b>65.16</b>		<b>521.28</b>	<b>378.11</b>		<b>129.50</b>	<b>507.61</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	63.45	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	63.45	in <sup>3</sup>
I <sub>y</sub> =	507.61	in <sup>4</sup>	S <sub>left</sub> =	63.45	in <sup>3</sup>	I <sub>y</sub> =	507.61	in <sup>4</sup>	S <sub>left</sub> =	63.45	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	65.1600	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	65.1600	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.7911	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.7911	in

Non-composite Capacities*		
	AB	AI
M	3651.07 k-ft	3651.07 k-ft
V	500.70 k	500.70 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/21/2012  
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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.5000$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.5000$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

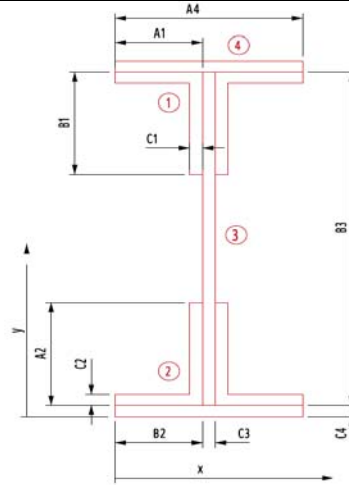
$C_3 = 0.5000$  in  
 $*B_3 = 57.1200$  in

$d_o = 54.0000$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in



Girder 18-19 Section 5

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	6.0000	57.3700	344.2200	0.1250	28.3100	4808.7366	4808.8616
	Vertical Leg	5.5000	54.3700	299.0350	13.8646	25.3100	3523.2786	3537.1431
2	Horizontal Leg	6.0000	0.7500	4.5000	0.1250	28.3100	4808.7366	4808.8616
	Vertical Leg	5.5000	3.7500	20.6250	13.8646	25.3100	3523.2786	3537.1431
3	Web Plate	28.5600	29.0600	829.9536	7765.2127	0.0000	0.0000	7765.2127
4	Cover Plate Top	8.0000	57.8700	462.9600	0.1667	28.8100	6640.1288	6640.2955
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	28.8100	6640.1288	6640.2955
<b>Total</b>		<b>67.56</b>		<b>1963.29</b>	<b>7793.53</b>		<b>29944.29</b>	<b>37737.81</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	29.0600	in	S <sub>top</sub> = 1298.62 in <sup>3</sup>	y-bar =	29.0600	in	S <sub>top</sub> = 1298.62 in <sup>3</sup>
I <sub>x</sub> =	37737.81	n <sup>4</sup>	S <sub>bottom</sub> = 1298.62 in <sup>3</sup>	I <sub>x</sub> =	37737.81	in <sup>4</sup>	S <sub>bottom</sub> = 1298.62 in <sup>3</sup>
C <sub>top</sub> =	29.0600	in	A = 67.5600 in <sup>2</sup>	C <sub>top</sub> =	29.0600	in	A = 67.5600 in <sup>2</sup>
C <sub>bottom</sub> =	29.0600	in	r <sub>x</sub> = 23.6343 in	C <sub>bottom</sub> =	29.0600	in	r <sub>x</sub> = 23.6343 in
J =	5.6300		Z = 1486.9268 in <sup>3</sup>				Z = 1486.9268 in <sup>3</sup>



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Date 3/21/2012  
 Date 3/30/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448
1 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448
2 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448
2 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448
3	Web Plate	28.5600	8.0000	228.4800	0.5950	0.0000	0.0000	0.5950
4	Cover Plate	16.0000	8.0000	128.0000	341.3333	0.0000	0.0000	341.3333
<b>Total</b>		<b>67.56</b>		<b>540.48</b>	<b>378.16</b>		<b>129.50</b>	<b>507.66</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	63.46	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	63.46	in <sup>3</sup>
I <sub>y</sub> =	507.66	in <sup>4</sup>	S <sub>left</sub> =	63.46	in <sup>3</sup>	I <sub>y</sub> =	507.66	in <sup>4</sup>	S <sub>left</sub> =	63.46	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	67.5600	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	67.5600	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.7412	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.7412	in

Non-composite Capacities*		
	AB	AI
M	4089.05 k-ft	4089.05 k-ft
V	546.64 k	546.64 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/21/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.5000$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

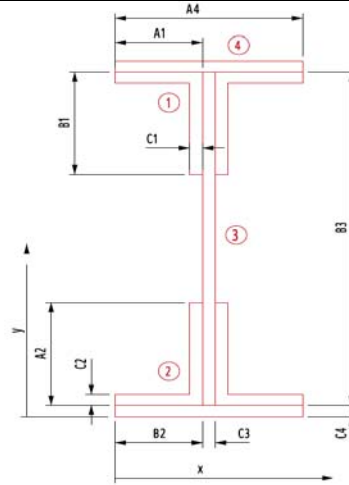
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.5000$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 54.3600$  in  
 $d_o = 33.2500$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in



**Girder 19-20 Section 1**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	6.0000	54.6100	327.6600	0.1250	26.9300	4351.3494	4351.4744
	Vertical Leg	5.5000	51.6100	283.8550	13.8646	23.9300	3149.5470	3163.4115
2	Horizontal Leg	6.0000	0.7500	4.5000	0.1250	26.9300	4351.3494	4351.4744
	Vertical Leg	5.5000	3.7500	20.6250	13.8646	23.9300	3149.5470	3163.4115
3	Web Plate	27.1800	27.6800	752.3424	6693.0967	0.0000	0.0000	6693.0967
4	Cover Plate Top	8.0000	55.1100	440.8800	0.1667	27.4300	6019.2392	6019.4059
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	27.4300	6019.2392	6019.4059
<b>Total</b>		<b>66.18</b>		<b>1831.86</b>	<b>6721.41</b>		<b>27040.27</b>	<b>33761.68</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	27.6800	in	S <sub>top</sub> =	1219.71	in <sup>3</sup>	y-bar =	27.6800	in	S <sub>top</sub> =	1219.71	in <sup>3</sup>
I <sub>x</sub> =	33761.68	n <sup>4</sup>	S <sub>bott.</sub> =	1219.71	in <sup>3</sup>	I <sub>x</sub> =	33761.68	in <sup>4</sup>	S <sub>bott.</sub> =	1219.71	in <sup>3</sup>
C <sub>top</sub> =	27.6800	in	A =	66.1800	in <sup>2</sup>	C <sub>top</sub> =	27.6800	in	A =	66.1800	in <sup>2</sup>
C <sub>bottom</sub> =	27.6800	in	r <sub>x</sub> =	22.5865	in	C <sub>bottom</sub> =	27.6800	in	r <sub>x</sub> =	22.5865	in
J =	5.5150		Z =	1394.6462	in <sup>3</sup>	Z =	1394.6462	in <sup>3</sup>			



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448
1 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448
2 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448
2 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448
3	Web Plate	27.1800	8.0000	217.4400	0.5663	0.0000	0.0000	0.5663
4	Cover Plate	16.0000	8.0000	128.0000	341.3333	0.0000	0.0000	341.3333
<b>Total</b>		<b>66.18</b>		<b>529.44</b>	<b>378.13</b>		<b>129.50</b>	<b>507.63</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	63.45	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	63.45	in <sup>3</sup>
I <sub>y</sub> =	507.63	in <sup>4</sup>	S <sub>left</sub> =	63.45	in <sup>3</sup>	I <sub>y</sub> =	507.63	in <sup>4</sup>	S <sub>left</sub> =	63.45	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	66.1800	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	66.1800	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.7696	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.7696	in

Non-composite Capacities*		
	AB	AI
M	3835.28 k-ft	3835.28 k-ft
V	520.23 k	520.23 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.5000$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

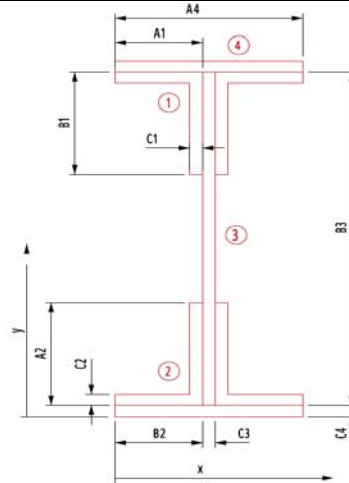
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.5000$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 48.6000$  in  
 $d_o = 50.0000$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in



**Girder 19-20 Section 2**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	6.0000	48.8500	293.1000	0.1250	24.0500	3470.4150	3470.5400
	Vertical Leg	5.5000	45.8500	252.1750	13.8646	21.0500	2437.0638	2450.9283
2	Horizontal Leg	6.0000	0.7500	4.5000	0.1250	24.0500	3470.4150	3470.5400
	Vertical Leg	5.5000	3.7500	20.6250	13.8646	21.0500	2437.0638	2450.9283
3	Web Plate	24.3000	24.8000	602.6400	4782.9690	0.0000	0.0000	4782.9690
4	Cover Plate Top	8.0000	49.3500	394.8000	0.1667	24.5500	4821.6200	4821.7867
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	24.5500	4821.6200	4821.7867
<b>Total</b>		<b>63.30</b>		<b>1569.84</b>	<b>4811.28</b>		<b>21458.20</b>	<b>26269.48</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	24.8000	in	$S_{top} = 1059.25$	in <sup>3</sup>	y-bar =	24.8000	in	$S_{top} = 1059.25$	in <sup>3</sup>		
$I_x =$	26269.48	n <sup>4</sup>	$S_{bott.} = 1059.25$	in <sup>3</sup>	$I_x =$	26269.48	in <sup>4</sup>	$S_{bott.} = 1059.25$	in <sup>3</sup>		
$C_{top} =$	24.8000	in	A =	63.3000	in <sup>2</sup>	$C_{top} =$	24.8000	in	A =	63.3000	in <sup>2</sup>
$C_{bottom} =$	24.8000	in	$r_x =$	20.3715	in	$C_{bottom} =$	24.8000	in	$r_x =$	20.3715	in
J =	5.2750		Z =	1208.1950	in <sup>3</sup>				Z =	1208.1950	in <sup>3</sup>



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Date 3/21/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448
1 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448
2 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448
2 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448
3	Web Plate	24.3000	8.0000	194.4000	0.5063	0.0000	0.0000	0.5063
4	Cover Plate	16.0000	8.0000	128.0000	341.3333	0.0000	0.0000	341.3333
<b>Total</b>		<b>63.30</b>		<b>506.40</b>	<b>378.07</b>		<b>129.50</b>	<b>507.57</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	63.45	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	63.45	in <sup>3</sup>
I <sub>y</sub> =	507.57	in <sup>4</sup>	S <sub>left</sub> =	63.45	in <sup>3</sup>	I <sub>y</sub> =	507.57	in <sup>4</sup>	S <sub>left</sub> =	63.45	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	63.3000	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	63.3000	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.8317	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.8317	in

Non-composite Capacities*		
	AB	AI
M	3322.54 k-ft	3322.54 k-ft
V	465.10 k	465.10 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
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AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.5000$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

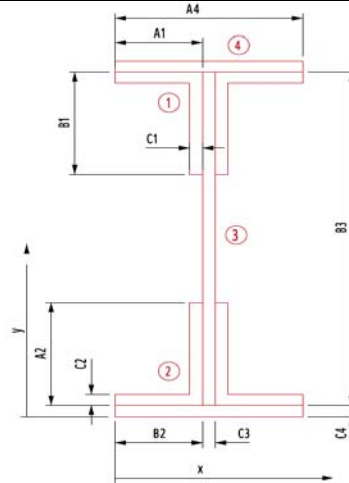
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.5000$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 54.6000$  in  
 $d_o = 30.1250$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in



**Girder 19-20 Section 3**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg		6.0000	54.8500	329.1000	0.1250	27.0500	4390.2150	4390.3400
	Vertical Leg		5.5000	51.8500	285.1750	13.8646	24.0500	3181.2138	3195.0783
2	Horizontal Leg		6.0000	0.7500	4.5000	0.1250	27.0500	4390.2150	4390.3400
	Vertical Leg		5.5000	3.7500	20.6250	13.8646	24.0500	3181.2138	3195.0783
3	Web Plate		27.3000	27.8000	758.9400	6782.1390	0.0000	0.0000	6782.1390
4	Cover Plate Top		8.0000	55.3500	442.8000	0.1667	27.5500	6072.0200	6072.1867
	Cover Plate Bottom		8.0000	0.2500	2.0000	0.1667	27.5500	6072.0200	6072.1867
<b>Total</b>			<b>66.30</b>		<b>1843.14</b>	<b>6810.45</b>		<b>27286.90</b>	<b>34097.35</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	27.8000	in	S <sub>top</sub> = 1226.52 in <sup>3</sup>	y-bar =	27.8000	in	S <sub>top</sub> = 1226.52 in <sup>3</sup>
I <sub>x</sub> =	34097.35	n <sup>4</sup>	S <sub>bott.</sub> = 1226.52 in <sup>3</sup>	I <sub>x</sub> =	34097.35	in <sup>4</sup>	S <sub>bott.</sub> = 1226.52 in <sup>3</sup>
C <sub>top</sub> =	27.8000	in	A = 66.3000 in <sup>2</sup>	C <sub>top</sub> =	27.8000	in	A = 66.3000 in <sup>2</sup>
C <sub>bottom</sub> =	27.8000	in	r <sub>x</sub> = 22.6779 in	C <sub>bottom</sub> =	27.8000	in	r <sub>x</sub> = 22.6779 in
J =	5.5250		Z = 1402.5950 in <sup>3</sup>				Z = 1402.5950 in <sup>3</sup>





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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448
1 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448
2 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448
2 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448
3	Web Plate	27.3000	8.0000	218.4000	0.5688	0.0000	0.0000	0.5688
4	Cover Plate	16.0000	8.0000	128.0000	341.3333	0.0000	0.0000	341.3333
<b>Total</b>		<b>66.30</b>		<b>530.40</b>	<b>378.13</b>		<b>129.50</b>	<b>507.63</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	63.45	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	63.45	in <sup>3</sup>
I <sub>y</sub> =	507.63	in <sup>4</sup>	S <sub>left</sub> =	63.45	in <sup>3</sup>	I <sub>y</sub> =	507.63	in <sup>4</sup>	S <sub>left</sub> =	63.45	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	66.3000	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	66.3000	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.7671	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.7671	in

Non-composite Capacities*		
	AB	AI
M	3857.14 k-ft	3857.14 k-ft
V	522.52 k	522.52 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
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AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

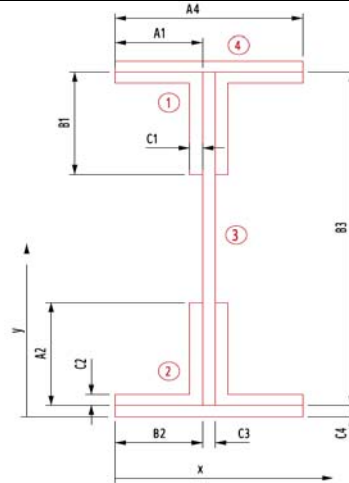
$C_3 = 0.5000$  in  
 $*B_3 = 58.5600$  in

$d_o = 53.8125$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 1.1250$  in  
 $A_4 = 16.0000$  in



**Girder 20-21 Section 1**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg		9.0000	59.3100	533.7900	0.4219	28.9050	7519.4912	7519.9131
	Vertical Leg		7.8750	56.3100	443.4413	18.0879	25.9050	5284.6686	5302.7565
2	Horizontal Leg		9.0000	1.5000	13.5000	0.4219	28.9050	7519.4912	7519.9131
	Vertical Leg		7.8750	4.5000	35.4375	18.0879	25.9050	5284.6686	5302.7565
3	Web Plate		29.2800	30.4050	890.2584	8367.4276	0.0000	0.0000	8367.4276
4	Cover Plate Top		18.0000	60.2475	1084.4550	1.8984	29.8425	16030.3465	16032.2450
	Cover Plate Bottom		18.0000	0.5625	10.1250	1.8984	29.8425	16030.3465	16032.2450
<b>Total</b>			<b>99.03</b>		<b>3011.01</b>	<b>8408.24</b>		<b>57669.01</b>	<b>66077.26</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
y-bar =	30.4050	in	S <sub>top</sub> =	2173.24	in <sup>3</sup>	y-bar =	30.4050	in	S <sub>top</sub> =	2173.24	in <sup>3</sup>
I <sub>x</sub> =	66077.26	in <sup>4</sup>	S <sub>bott.</sub> =	2173.24	in <sup>3</sup>	I <sub>x</sub> =	66077.26	in <sup>4</sup>	S <sub>bott.</sub> =	2173.24	in <sup>3</sup>
C <sub>top</sub> =	30.4050	in	A =	99.0300	in <sup>2</sup>	C <sub>top</sub> =	30.4050	in	A =	99.0300	in <sup>2</sup>
C <sub>bottom</sub> =	30.4050	in	r <sub>x</sub> =	25.8311	in	C <sub>bottom</sub> =	30.4050	in	r <sub>x</sub> =	25.8311	in
J =	23.9556		Z =	2431.2830	in <sup>3</sup>	Z =	2431.2830			in <sup>3</sup>	



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Date 3/21/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
3	Web Plate	29.2800	8.0000	234.2400	0.6100	0.0000	0.0000	0.6100
4	Cover Plate	36.0000	8.0000	288.0000	768.0000	0.0000	0.0000	768.0000
<b>Total</b>		<b>99.03</b>		<b>792.24</b>	<b>823.35</b>		<b>196.28</b>	<b>1019.63</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	127.45	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	127.45	in <sup>3</sup>
I <sub>y</sub> =	1019.63	in <sup>4</sup>	S <sub>left</sub> =	127.45	in <sup>3</sup>	I <sub>y</sub> =	1019.63	in <sup>4</sup>	S <sub>left</sub> =	127.45	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	99.0300	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	99.0300	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.2088	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.2088	in

Non-composite Capacities*		
	AB	AI
M	6686.03 k-ft	6686.03 k-ft
V	560.42 k	560.42 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

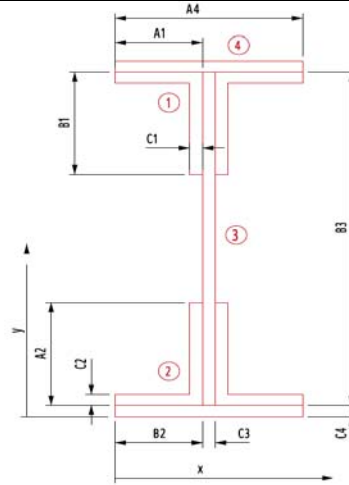
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 54.4800$  in  
 $d_o = 56.0000$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 1.1250$  in  
 $A_4 = 16.0000$  in



**Girder 20-21 Section 2**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	55.2300	497.0700	0.4219	26.8650	6495.5540	6495.9759
	Vertical Leg	7.8750	52.2300	411.3113	18.0879	23.8650	4485.1135	4503.2014
2	Horizontal Leg	9.0000	1.5000	13.5000	0.4219	26.8650	6495.5540	6495.9759
	Vertical Leg	7.8750	4.5000	35.4375	18.0879	23.8650	4485.1135	4503.2014
3	Web Plate	27.2400	28.3650	772.6626	6737.5198	0.0000	0.0000	6737.5198
4	Cover Plate Top	18.0000	56.1675	1011.0150	1.8984	27.8025	13913.6221	13915.5206
	Cover Plate Bottom	18.0000	0.5625	10.1250	1.8984	27.8025	13913.6221	13915.5206
<b>Total</b>		<b>96.99</b>		<b>2751.12</b>	<b>6778.34</b>		<b>49788.58</b>	<b>56566.92</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	28.3650	in	S <sub>top</sub> =	1994.25	in <sup>3</sup>	y-bar =	28.3650	in	S <sub>top</sub> =	1994.25	in <sup>3</sup>
I <sub>x</sub> =	56566.92	in <sup>4</sup>	S <sub>bott.</sub> =	1994.25	in <sup>3</sup>	I <sub>x</sub> =	56566.92	in <sup>4</sup>	S <sub>bott.</sub> =	1994.25	in <sup>3</sup>
C <sub>top</sub> =	28.3650	in	A =	96.9900	in <sup>2</sup>	C <sub>top</sub> =	28.3650	in	A =	96.9900	in <sup>2</sup>
C <sub>bottom</sub> =	28.3650	in	r <sub>x</sub> =	24.1500	in	C <sub>bottom</sub> =	28.3650	in	r <sub>x</sub> =	24.1500	in
J =	23.7856		Z =	2231.3426	in <sup>3</sup>	J =	23.7856		Z =	2231.3426	in <sup>3</sup>



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Date 3/21/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
3	Web Plate	27.2400	8.0000	217.9200	0.5675	0.0000	0.0000	0.5675
4	Cover Plate	36.0000	8.0000	288.0000	768.0000	0.0000	0.0000	768.0000
<b>Total</b>		<b>96.99</b>		<b>775.92</b>	<b>823.31</b>		<b>196.28</b>	<b>1019.58</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	127.45	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	127.45	in <sup>3</sup>
I <sub>y</sub> =	1019.58	in <sup>4</sup>	S <sub>left</sub> =	127.45	in <sup>3</sup>	I <sub>y</sub> =	1019.58	in <sup>4</sup>	S <sub>left</sub> =	127.45	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	96.9900	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	96.9900	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.2423	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.2423	in

Non-composite Capacities*		
	AB	AI
M	6136.19 k-ft	6136.19 k-ft
V	521.37 k	521.37 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/21/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

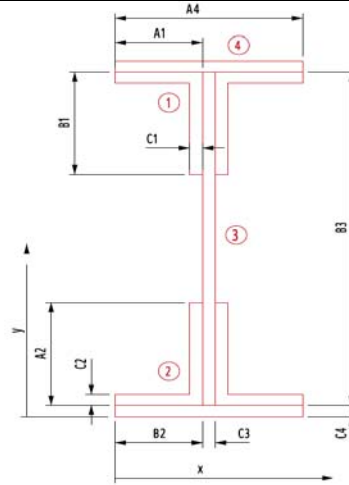
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 49.9200$  in  
 $d_o = 50.0000$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 1.6250$  in  
 $A_4 = 16.0000$  in



**Girder 20-21 Section 3**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	51.1700	460.5300	0.4219	24.5850	5439.8000	5440.2219
	Vertical Leg	7.8750	48.1700	379.3388	18.0879	21.5850	3669.0588	3687.1467
2	Horizontal Leg	9.0000	2.0000	18.0000	0.4219	24.5850	5439.8000	5440.2219
	Vertical Leg	7.8750	5.0000	39.3750	18.0879	21.5850	3669.0588	3687.1467
3	Web Plate	24.9600	26.5850	663.5616	5183.3733	0.0000	0.0000	5183.3733
4	Cover Plate Top	26.0000	52.3575	1361.2950	5.7214	25.7725	17269.7657	17275.4870
	Cover Plate Bottom	26.0000	0.8125	21.1250	5.7214	25.7725	17269.7657	17275.4870
<b>Total</b>		<b>110.71</b>		<b>2943.23</b>	<b>5231.84</b>		<b>52757.25</b>	<b>57989.08</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	26.5850	in	S <sub>top</sub> = 2181.27 in <sup>3</sup>	y-bar =	26.5850	in	S <sub>top</sub> = 2181.27 in <sup>3</sup>
I <sub>x</sub> =	57989.08	n <sup>4</sup>	S <sub>bottom</sub> = 2181.27 in <sup>3</sup>	I <sub>x</sub> =	57989.08	in <sup>4</sup>	S <sub>bottom</sub> = 2181.27 in <sup>3</sup>
C <sub>top</sub> =	26.5850	in	A = 110.7100 in <sup>2</sup>	C <sub>top</sub> =	26.5850	in	A = 110.7100 in <sup>2</sup>
C <sub>bottom</sub> =	26.5850	in	r <sub>x</sub> = 22.8865 in	C <sub>bottom</sub> =	26.5850	in	r <sub>x</sub> = 22.8865 in
J =	54.1790		Z = 2434.1646 in <sup>3</sup>				Z = 2434.1646 in <sup>3</sup>



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Date 3/21/2012  
 Date 3/30/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	24.9600	8.0000	199.6800	0.5200	0.0000	0.0000	0.5200	
4	Cover Plate	52.0000	8.0000	416.0000	1109.3333	0.0000	0.0000	1109.3333	
<b>Total</b>		<b>110.71</b>		<b>885.68</b>	<b>1164.59</b>		<b>196.28</b>	<b>1360.87</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	170.11	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	170.11	in <sup>3</sup>
I <sub>y</sub> =	1360.87	in <sup>4</sup>	S <sub>left</sub> =	170.11	in <sup>3</sup>	I <sub>y</sub> =	1360.87	in <sup>4</sup>	S <sub>left</sub> =	170.11	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	110.7100	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	110.7100	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5060	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5060	in

Non-composite Capacities*		
	AB	AI
M	6693.95 k-ft	6693.95 k-ft
V	477.73 k	477.73 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
------------------	-----------

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/21/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

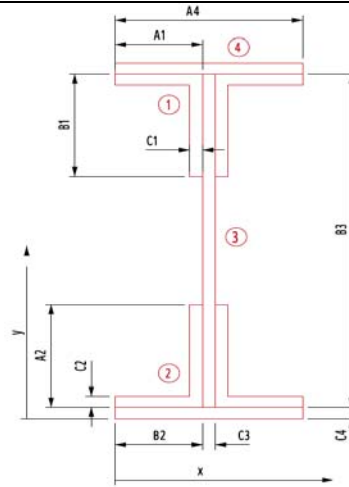
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 49.6800$  in  
 $d_o = 52.0000$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 1.1250$  in  
 $A_4 = 16.0000$  in



**Girder 20-21 Section 4**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg		9.0000	50.4300	453.8700	0.4219	24.4650	5386.8260	5387.2479
	Vertical Leg		7.8750	47.4300	373.5113	18.0879	21.4650	3628.3765	3646.4644
2	Horizontal Leg		9.0000	1.5000	13.5000	0.4219	24.4650	5386.8260	5387.2479
	Vertical Leg		7.8750	4.5000	35.4375	18.0879	21.4650	3628.3765	3646.4644
3	Web Plate		24.8400	25.9650	644.9706	5108.9720	0.0000	0.0000	5108.9720
4	Cover Plate Top		18.0000	51.3675	924.6150	1.8984	25.4025	11615.1661	11617.0646
	Cover Plate Bottom		18.0000	0.5625	10.1250	1.8984	25.4025	11615.1661	11617.0646
<b>Total</b>			<b>94.59</b>		<b>2456.03</b>	<b>5149.79</b>		<b>41260.74</b>	<b>46410.53</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	25.9650	in	S <sub>top</sub> = 1787.43 in <sup>3</sup>	y-bar =	25.9650	in	S <sub>top</sub> = 1787.43 in <sup>3</sup>
I <sub>x</sub> =	46410.53	n <sup>4</sup>	S <sub>bott.</sub> = 1787.43 in <sup>3</sup>	I <sub>x</sub> =	46410.53	in <sup>4</sup>	S <sub>bott.</sub> = 1787.43 in <sup>3</sup>
C <sub>top</sub> =	25.9650	in	A = 94.5900 in <sup>2</sup>	C <sub>top</sub> =	25.9650	in	A = 94.5900 in <sup>2</sup>
C <sub>bottom</sub> =	25.9650	in	r <sub>x</sub> = 22.1506 in	C <sub>bottom</sub> =	25.9650	in	r <sub>x</sub> = 22.1506 in
J =	23.5856		Z = 2001.4466 in <sup>3</sup>				Z = 2001.4466 in <sup>3</sup>





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 Date 3/30/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	24.8400	8.0000	198.7200	0.5175	0.0000	0.0000	0.5175	
4	Cover Plate	36.0000	8.0000	288.0000	768.0000	0.0000	0.0000	768.0000	
<b>Total</b>		<b>94.59</b>		<b>756.72</b>	<b>823.26</b>		<b>196.28</b>	<b>1019.53</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	127.44	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	127.44	in <sup>3</sup>
I <sub>y</sub> =	1019.53	in <sup>4</sup>	S <sub>left</sub> =	127.44	in <sup>3</sup>	I <sub>y</sub> =	1019.53	in <sup>4</sup>	S <sub>left</sub> =	127.44	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	94.5900	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	94.5900	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.2831	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.2831	in

Non-composite Capacities*		
	AB	AI
M	5503.98 k-ft	5503.98 k-ft
V	475.44 k	475.44 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/21/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

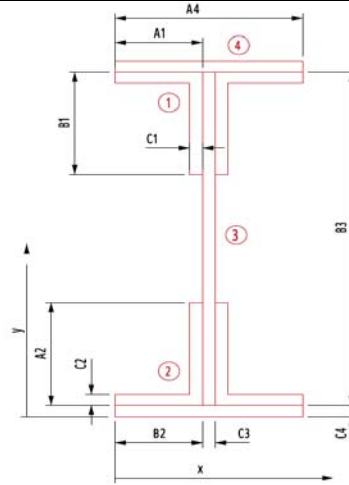
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 54.4800$  in  
 $d_o = 54.0000$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 1.1250$  in  
 $A_4 = 16.0000$  in



**Girder 20-21 Section 5**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	55.2300	497.0700	0.4219	26.8650	6495.5540	6495.9759
	Vertical Leg	7.8750	52.2300	411.3113	18.0879	23.8650	4485.1135	4503.2014
2	Horizontal Leg	9.0000	1.5000	13.5000	0.4219	26.8650	6495.5540	6495.9759
	Vertical Leg	7.8750	4.5000	35.4375	18.0879	23.8650	4485.1135	4503.2014
3	Web Plate	27.2400	28.3650	772.6626	6737.5198	0.0000	0.0000	6737.5198
4	Cover Plate Top	18.0000	56.1675	1011.0150	1.8984	27.8025	13913.6221	13915.5206
	Cover Plate Bottom	18.0000	0.5625	10.1250	1.8984	27.8025	13913.6221	13915.5206
<b>Total</b>		<b>96.99</b>		<b>2751.12</b>	<b>6778.34</b>		<b>49788.58</b>	<b>56566.92</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	28.3650	in	S <sub>top</sub> =	1994.25	in <sup>3</sup>	y-bar =	28.3650	in	S <sub>top</sub> =	1994.25	in <sup>3</sup>
I <sub>x</sub> =	56566.92	n <sup>4</sup>	S <sub>bott.</sub> =	1994.25	in <sup>3</sup>	I <sub>x</sub> =	56566.92	in <sup>4</sup>	S <sub>bott.</sub> =	1994.25	in <sup>3</sup>
C <sub>top</sub> =	28.3650	in	A =	96.9900	in <sup>2</sup>	C <sub>top</sub> =	28.3650	in	A =	96.9900	in <sup>2</sup>
C <sub>bottom</sub> =	28.3650	in	r <sub>x</sub> =	24.1500	in	C <sub>bottom</sub> =	28.3650	in	r <sub>x</sub> =	24.1500	in
J =	23.7856		Z =	2231.3426	in <sup>3</sup>				Z =	2231.3426	in <sup>3</sup>



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Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
3	Web Plate	27.2400	8.0000	217.9200	0.5675	0.0000	0.0000	0.5675
4	Cover Plate	36.0000	8.0000	288.0000	768.0000	0.0000	0.0000	768.0000
<b>Total</b>		<b>96.99</b>		<b>775.92</b>	<b>823.31</b>		<b>196.28</b>	<b>1019.58</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	127.45	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	127.45	in <sup>3</sup>
I <sub>y</sub> =	1019.58	in <sup>4</sup>	S <sub>left</sub> =	127.45	in <sup>3</sup>	I <sub>y</sub> =	1019.58	in <sup>4</sup>	S <sub>left</sub> =	127.45	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	96.9900	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	96.9900	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.2423	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.2423	in

Non-composite Capacities*		
	AB	AI
M	6136.19 k-ft	6136.19 k-ft
V	521.37 k	521.37 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



Made By CTG  
Checked By DMP

Date 3/21/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

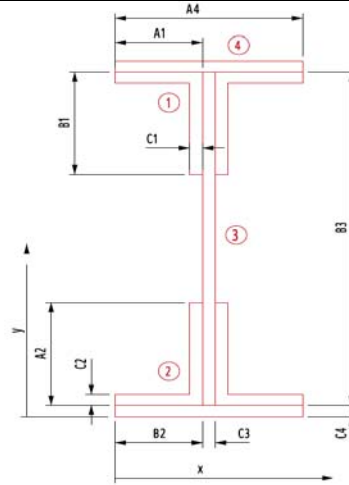
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 59.0400$  in  
 $d_o = 59.5000$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 1.1250$  in  
 $A_4 = 16.0000$  in



**Girder 20-21 Section 6**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	59.7900	538.1100	0.4219	29.1450	7644.8792	7645.3011
	Vertical Leg	7.8750	56.7900	447.2213	18.0879	26.1450	5383.0431	5401.1310
2	Horizontal Leg	9.0000	1.5000	13.5000	0.4219	29.1450	7644.8792	7645.3011
	Vertical Leg	7.8750	4.5000	35.4375	18.0879	26.1450	5383.0431	5401.1310
3	Web Plate	29.5200	30.6450	904.6404	8574.8751	0.0000	0.0000	8574.8751
4	Cover Plate Top	18.0000	60.7275	1093.0950	1.8984	30.0825	16289.2225	16291.1210
	Cover Plate Bottom	18.0000	0.5625	10.1250	1.8984	30.0825	16289.2225	16291.1210
<b>Total</b>		<b>99.27</b>		<b>3042.13</b>	<b>8615.69</b>		<b>58634.29</b>	<b>67249.98</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	30.6450	in	$S_{top} = 2194.48$	in <sup>3</sup>	y-bar =	30.6450	in	$S_{top} = 2194.48$	in <sup>3</sup>		
$I_x =$	67249.98	n <sup>4</sup>	$S_{bott.} = 2194.48$	in <sup>3</sup>	$I_x =$	67249.98	in <sup>4</sup>	$S_{bott.} = 2194.48$	in <sup>3</sup>		
$C_{top} =$	30.6450	in	A =	99.2700	in <sup>2</sup>	$C_{top} =$	30.6450	in	A =	99.2700	in <sup>2</sup>
$C_{bottom} =$	30.6450	in	$r_x =$	26.0278	in	$C_{bottom} =$	30.6450	in	$r_x =$	26.0278	in
J =	23.9756		Z =	2455.0790	in <sup>3</sup>				Z =	2455.0790	in <sup>3</sup>



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Date 3/21/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
3	Web Plate	29.5200	8.0000	236.1600	0.6150	0.0000	0.0000	0.6150
4	Cover Plate	36.0000	8.0000	288.0000	768.0000	0.0000	0.0000	768.0000
<b>Total</b>		<b>99.27</b>		<b>794.16</b>	<b>823.35</b>		<b>196.28</b>	<b>1019.63</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	127.45	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	127.45	in <sup>3</sup>
I <sub>y</sub> =	1019.63	in <sup>4</sup>	S <sub>left</sub> =	127.45	in <sup>3</sup>	I <sub>y</sub> =	1019.63	in <sup>4</sup>	S <sub>left</sub> =	127.45	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	99.2700	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	99.2700	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.2049	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.2049	in

Non-composite Capacities*		
	AB	AI
M	6751.47 k-ft	6751.47 k-ft
V	565.01 k	565.01 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
------------------	-----------

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/21/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

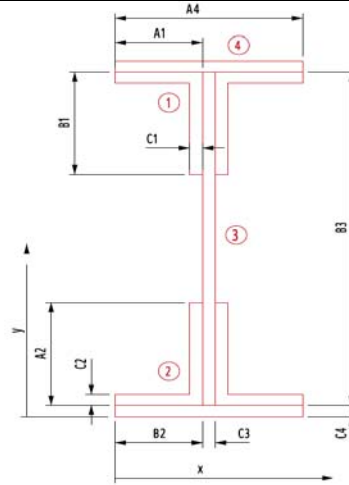
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 63.2400$  in  
 $d_o = 59.2500$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 1.1250$  in  
 $A_4 = 16.0000$  in



**Girder 20-21 Section 7**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	63.9900	575.9100	0.4219	31.2450	8786.2502	8786.6721
	Vertical Leg	7.8750	60.9900	480.2963	18.0879	28.2450	6282.5177	6300.6056
2	Horizontal Leg	9.0000	1.5000	13.5000	0.4219	31.2450	8786.2502	8786.6721
	Vertical Leg	7.8750	4.5000	35.4375	18.0879	28.2450	6282.5177	6300.6056
3	Web Plate	31.6200	32.7450	1035.3969	10538.1492	0.0000	0.0000	10538.1492
4	Cover Plate Top	18.0000	64.9275	1168.6950	1.8984	32.1825	18642.8395	18644.7380
	Cover Plate Bottom	18.0000	0.5625	10.1250	1.8984	32.1825	18642.8395	18644.7380
<b>Total</b>		<b>101.37</b>		<b>3319.36</b>	<b>10578.97</b>		<b>67423.21</b>	<b>78002.18</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	32.7450	in	$S_{top} = 2382.11$	in <sup>3</sup>	y-bar =	32.7450	in	$S_{top} = 2382.11$	in <sup>3</sup>		
$I_x =$	78002.18	n <sup>4</sup>	$S_{bott.} = 2382.11$	in <sup>3</sup>	$I_x =$	78002.18	in <sup>4</sup>	$S_{bott.} = 2382.11$	in <sup>3</sup>		
$C_{top} =$	32.7450	in	A =	101.3700	in <sup>2</sup>	$C_{top} =$	32.7450	in	A =	101.3700	in <sup>2</sup>
$C_{bottom} =$	32.7450	in	$r_x =$	27.7395	in	$C_{bottom} =$	32.7450	in	$r_x =$	27.7395	in
J =	24.1506		Z =	2665.7510	in <sup>3</sup>			Z =	2665.7510	in <sup>3</sup>	



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Date 3/21/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
3	Web Plate	31.6200	8.0000	252.9600	0.6588	0.0000	0.0000	0.6588
4	Cover Plate	36.0000	8.0000	288.0000	768.0000	0.0000	0.0000	768.0000
<b>Total</b>		<b>101.37</b>		<b>810.96</b>	<b>823.40</b>		<b>196.28</b>	<b>1019.67</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	127.46	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	127.46	in <sup>3</sup>
I <sub>y</sub> =	1019.67	in <sup>4</sup>	S <sub>left</sub> =	127.46	in <sup>3</sup>	I <sub>y</sub> =	1019.67	in <sup>4</sup>	S <sub>left</sub> =	127.46	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	101.3700	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	101.3700	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.1716	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.1716	in

Non-composite Capacities*		
	AB	AI
M	7330.82 k-ft	7330.82 k-ft
V	605.21 k	605.21 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
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AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 63.2400$  in

$d_o = 58.9375$  in

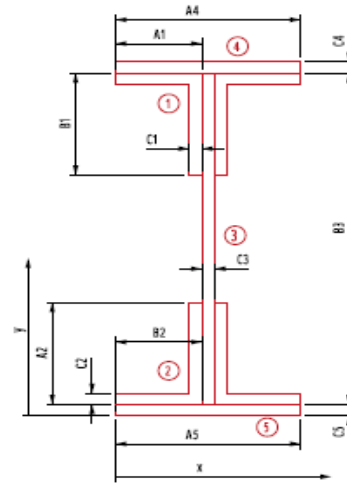
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.6250$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 1.1250$  in  
 $A_5 = 16.0000$  in



**Girder 21-22 Section 1**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	63.9900	575.9100	0.4219	34.0292	10421.8731	10422.2950
	Vertical Leg	7.8750	60.9900	480.2963	18.0879	31.0292	7582.1347	7600.2226
2	Horizontal Leg	9.0000	1.5000	13.5000	0.4219	28.4608	7290.1584	7290.5802
	Vertical Leg	7.8750	4.5000	35.4375	18.0879	25.4608	5104.9904	5123.0783
3	Web Plate	31.6200	32.7450	1035.3969	10538.1492	2.7842	245.1095	10783.2587
4	Cover Plate Top	10.0000	64.6775	646.7750	0.3255	34.7167	12052.4870	12052.8125
	Cover Plate Bottom	18.0000	0.5625	10.1250	1.8984	29.3983	15556.6893	15558.5878
<b>Total</b>		<b>93.37</b>		<b>2797.44</b>	<b>10577.39</b>		<b>58253.44</b>	<b>68830.84</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	29.9608 in	S <sub>top</sub> =	1964.96 in <sup>3</sup>	y-bar =	29.9608 in	S <sub>top</sub> =	1964.96 in <sup>3</sup>
I <sub>x</sub> =	68830.84 in <sup>4</sup>	S <sub>bott.</sub> =	2297.36 in <sup>3</sup>	I <sub>x</sub> =	68830.84 in <sup>4</sup>	S <sub>bott.</sub> =	2297.36 in <sup>3</sup>
C <sub>top</sub> =	35.0292 in	A =	93.3700 in <sup>2</sup>	C <sub>top</sub> =	35.0292 in	A =	93.3700 in <sup>2</sup>
C <sub>bottom</sub> =	29.9608 in	r <sub>x</sub> =	27.1511 in	C <sub>bottom</sub> =	29.9608 in	r <sub>x</sub> =	27.1511 in
J =	17.8590	Z =	2373.7910 in <sup>3</sup>	Z =	2373.7910		in <sup>3</sup>





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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	31.6200	8.0000	252.9600	0.6588	0.0000	0.0000	0.6588	
4	Top Cover Plate	10.0000	8.0000	80.0000	426.6667	0.0000	0.0000	426.6667	
4	Bottom Cover Plate	18.0000	8.0000	144.0000	768.0000	0.0000	0.0000	768.0000	
<b>Total</b>		<b>93.37</b>		<b>746.96</b>	<b>1250.06</b>		<b>196.28</b>	<b>1446.34</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	180.79	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	180.79	in <sup>3</sup>
I <sub>y</sub> =	1446.34	in <sup>4</sup>	S <sub>left</sub> =	180.79	in <sup>3</sup>	I <sub>y</sub> =	1446.34	in <sup>4</sup>	S <sub>left</sub> =	180.79	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	93.3700	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	93.3700	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.9358	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.9358	in

Non-composite Capacities*		
	AB	AI
M	6527.93 k-ft	6527.93 k-ft
V	605.21 k	605.21 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 59.1600$  in

$d_o = 49.7500$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.6250$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 1.1250$  in  
 $A_5 = 16.0000$  in



**Girder 21-22 Section 2**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	59.9100	539.1900	0.4219	31.8727	9142.8145	9143.2364
	Vertical Leg	7.8750	56.9100	448.1663	18.0879	28.8727	6564.8532	6582.9410
2	Horizontal Leg	9.0000	1.5000	13.5000	0.4219	26.5373	6338.0601	6338.4819
	Vertical Leg	7.8750	4.5000	35.4375	18.0879	23.5373	4362.7896	4380.8775
3	Web Plate	29.5800	30.7050	908.2539	8627.2673	2.6677	210.5079	8837.7752
4	Cover Plate Top	10.0000	60.5975	605.9750	0.3255	32.5602	10601.6588	10601.9843
	Cover Plate Bottom	18.0000	0.5625	10.1250	1.8984	27.4748	13587.5747	13589.4731
<b>Total</b>		<b>91.33</b>		<b>2560.65</b>	<b>8666.51</b>		<b>50808.26</b>	<b>59474.77</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	28.0373	in	S <sub>top</sub> =	1809.25	in <sup>3</sup>	y-bar =	28.0373	in	S <sub>top</sub> =	1809.25	in <sup>3</sup>
I <sub>x</sub> =	59474.77	in <sup>4</sup>	S <sub>bott.</sub> =	2121.27	in <sup>3</sup>	I <sub>x</sub> =	59474.77	in <sup>4</sup>	S <sub>bott.</sub> =	2121.27	in <sup>3</sup>
C <sub>top</sub> =	32.8727	in	A =	91.3300	in <sup>2</sup>	C <sub>top</sub> =	32.8727	in	A =	91.3300	in <sup>2</sup>
C <sub>bottom</sub> =	28.0373	in	r <sub>x</sub> =	25.5188	in	C <sub>bottom</sub> =	28.0373	in	r <sub>x</sub> =	25.5188	in
J =	17.6890		Z =	2185.3970	in <sup>3</sup>	Z =	2185.3970	in <sup>3</sup>			



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Date 3/22/2012  
 Date 3/30/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	29.5800	8.0000	236.6400	0.6163	0.0000	0.0000	0.6163	
4	Top Cover Plate	10.0000	8.0000	80.0000	426.6667	0.0000	0.0000	426.6667	
4	Bottom Cover Plate	18.0000	8.0000	144.0000	768.0000	0.0000	0.0000	768.0000	
<b>Total</b>		<b>91.33</b>		<b>730.64</b>	<b>1250.02</b>		<b>196.28</b>	<b>1446.30</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	180.79	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	180.79	in <sup>3</sup>
I <sub>y</sub> =	1446.30	in <sup>4</sup>	S <sub>left</sub> =	180.79	in <sup>3</sup>	I <sub>y</sub> =	1446.30	in <sup>4</sup>	S <sub>left</sub> =	180.79	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	91.3300	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	91.3300	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.9794	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.9794	in

Non-composite Capacities*		
	AB	AI
M	6009.84 k-ft	6009.84 k-ft
V	566.16 k	566.16 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

**Top Angles:**

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

**Bottom Angles:**

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

**Web Plate:**

$C_3 = 0.5000$  in  
 $*B_3 = 55.4400$  in

$d_o = 49.7500$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

**Top Cover Plate:**

$C_4 = 0.6250$  in  
 $A_4 = 16.0000$  in

**Btm Cover Plate:**

$C_5 = 0.6250$  in  
 $A_5 = 16.0000$  in



**Girder 21-22 Section 3**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	55.6900	501.2100	0.4219	27.3450	6729.7412	6730.1631
	Vertical Leg	7.8750	52.6900	414.9338	18.0879	24.3450	4667.3473	4685.4352
2	Horizontal Leg	9.0000	1.0000	9.0000	0.4219	27.3450	6729.7412	6730.1631
	Vertical Leg	7.8750	4.0000	31.5000	18.0879	24.3450	4667.3473	4685.4352
3	Web Plate	27.7200	28.3450	785.7234	7100.0012	0.0000	0.0000	7100.0012
4	Cover Plate Top	10.0000	56.3775	563.7750	0.3255	28.0325	7858.2106	7858.5361
	Cover Plate Bottom	10.0000	0.3125	3.1250	0.3255	28.0325	7858.2106	7858.5361
<b>Total</b>		<b>81.47</b>		<b>2309.27</b>	<b>7137.67</b>		<b>38510.60</b>	<b>45648.27</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	28.3450	in	S <sub>top</sub> =	1610.45	in <sup>3</sup>	y-bar =	28.3450	in	S <sub>top</sub> =	1610.45	in <sup>3</sup>
I <sub>x</sub> =	45648.27	in <sup>4</sup>	S <sub>bott.</sub> =	1610.45	in <sup>3</sup>	I <sub>x</sub> =	45648.27	in <sup>4</sup>	S <sub>bott.</sub> =	1610.45	in <sup>3</sup>
C <sub>top</sub> =	28.3450	in	A =	81.4700	in <sup>2</sup>	C <sub>top</sub> =	28.3450	in	A =	81.4700	in <sup>2</sup>
C <sub>bottom</sub> =	28.3450	in	r <sub>x</sub> =	23.6708	in	C <sub>bottom</sub> =	28.3450	in	r <sub>x</sub> =	23.6708	in
J =	11.2423		Z =	1820.4930	in <sup>3</sup>	Z =	1820.4930	in <sup>3</sup>			



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Date 3/22/2012  
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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	27.7200	8.0000	221.7600	0.5775	0.0000	0.0000	0.5775	
4	Top Cover Plate	10.0000	8.0000	80.0000	426.6667	0.0000	0.0000	426.6667	
4	Bottom Cover Plate	10.0000	8.0000	80.0000	426.6667	0.0000	0.0000	426.6667	
<b>Total</b>		<b>81.47</b>		<b>651.76</b>	<b>908.65</b>		<b>196.28</b>	<b>1104.93</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	138.12	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	138.12	in <sup>3</sup>
I <sub>y</sub> =	1104.93	in <sup>4</sup>	S <sub>left</sub> =	138.12	in <sup>3</sup>	I <sub>y</sub> =	1104.93	in <sup>4</sup>	S <sub>left</sub> =	138.12	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	81.4700	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	81.4700	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.6827	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.6827	in

Non-composite Capacities*		
	AB	AI
M	5006.36 k-ft	5006.36 k-ft
V	530.56 k	530.56 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 50.7600$  in

$d_o = 56.0000$  in

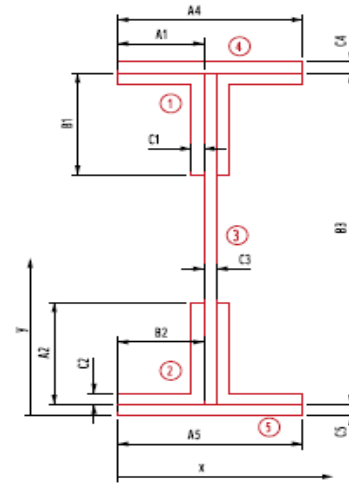
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.6250$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.6250$  in  
 $A_5 = 16.0000$  in



Girder 21-22 Section 4

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	51.0100	459.0900	0.4219	25.0050	5627.2502	5627.6721
	Vertical Leg	7.8750	48.0100	378.0788	18.0879	22.0050	3813.2327	3831.3206
2	Horizontal Leg	9.0000	1.0000	9.0000	0.4219	25.0050	5627.2502	5627.6721
	Vertical Leg	7.8750	4.0000	31.5000	18.0879	22.0050	3813.2327	3831.3206
3	Web Plate	25.3800	26.0050	660.0069	5449.4616	0.0000	0.0000	5449.4616
4	Cover Plate Top	10.0000	51.6975	516.9750	0.3255	25.6925	6601.0456	6601.3711
	Cover Plate Bottom	10.0000	0.3125	3.1250	0.3255	25.6925	6601.0456	6601.3711
<b>Total</b>		<b>79.13</b>		<b>2057.78</b>	<b>5487.13</b>		<b>32083.06</b>	<b>37570.19</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	26.0050	in	$S_{top} = 1444.73$	in <sup>3</sup>	y-bar =	26.0050	in	$S_{top} = 1444.73$	in <sup>3</sup>		
$I_x =$	37570.19	n <sup>4</sup>	$S_{bott.} = 1444.73$	in <sup>3</sup>	$I_x =$	37570.19	in <sup>4</sup>	$S_{bott.} = 1444.73$	in <sup>3</sup>		
$C_{top} =$	26.0050	in	A =	79.1300	in <sup>2</sup>	$C_{top} =$	26.0050	in	A =	79.1300	in <sup>2</sup>
$C_{bottom} =$	26.0050	in	$r_x =$	21.7897	in	$C_{bottom} =$	26.0050	in	$r_x =$	21.7897	in
J =	11.0473		Z =	1632.5910	in <sup>3</sup>				Z =	1632.5910	in <sup>3</sup>



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Date 3/22/2012  
 Date 3/30/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
3	Web Plate	25.3800	8.0000	203.0400	0.5288	0.0000	0.0000	0.5288
4	Top Cover Plate	10.0000	8.0000	80.0000	426.6667	0.0000	0.0000	426.6667
4	Bottom Cover Plate	10.0000	8.0000	80.0000	426.6667	0.0000	0.0000	426.6667
<b>Total</b>		<b>79.13</b>		<b>633.04</b>	<b>908.60</b>		<b>196.28</b>	<b>1104.88</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	138.11	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	138.11	in <sup>3</sup>
I <sub>y</sub> =	1104.88	in <sup>4</sup>	S <sub>left</sub> =	138.11	in <sup>3</sup>	I <sub>y</sub> =	1104.88	in <sup>4</sup>	S <sub>left</sub> =	138.11	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	79.1300	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	79.1300	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.7367	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.7367	in

Non-composite Capacities*		
	AB	AI
M	4489.63 k-ft	4489.63 k-ft
V	485.77 k	485.77 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 49.8000$  in

$d_o = 56.0000$  in

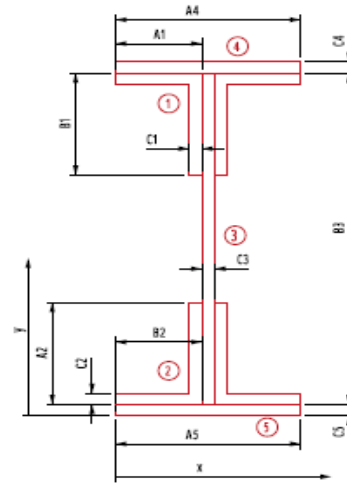
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 1.0000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 1.0000$  in  
 $A_5 = 16.0000$  in



**Girder 21-22 Section 5**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	50.4250	453.8250	0.4219	24.5250	5413.2806	5413.7025
	Vertical Leg	7.8750	47.4250	373.4719	18.0879	21.5250	3648.6893	3666.7772
2	Horizontal Leg	9.0000	1.3750	12.3750	0.4219	24.5250	5413.2806	5413.7025
	Vertical Leg	7.8750	4.3750	34.4531	18.0879	21.5250	3648.6893	3666.7772
3	Web Plate	24.9000	25.9000	644.9100	5146.0830	0.0000	0.0000	5146.0830
4	Cover Plate Top	16.0000	51.3000	820.8000	1.3333	25.4000	10322.5600	10323.8933
	Cover Plate Bottom	16.0000	0.5000	8.0000	1.3333	25.4000	10322.5600	10323.8933
<b>Total</b>		<b>90.65</b>		<b>2347.84</b>	<b>5185.77</b>		<b>38769.06</b>	<b>43954.83</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	25.9000 in	S <sub>top</sub> =	1697.10 in <sup>3</sup>	y-bar =	25.9000 in	S <sub>top</sub> =	1697.10 in <sup>3</sup>
I <sub>x</sub> =	43954.83 in <sup>4</sup>	S <sub>bottom</sub> =	1697.10 in <sup>3</sup>	I <sub>x</sub> =	43954.83 in <sup>4</sup>	S <sub>bottom</sub> =	1697.10 in <sup>3</sup>
C <sub>top</sub> =	25.9000 in	A =	90.6500 in <sup>2</sup>	C <sub>top</sub> =	25.9000 in	A =	90.6500 in <sup>2</sup>
C <sub>bottom</sub> =	25.9000 in	r <sub>x</sub> =	22.0201 in	C <sub>bottom</sub> =	25.9000 in	r <sub>x</sub> =	22.0201 in
J =	19.0698	Z =	1903.2738 in <sup>3</sup>	Z =	1903.2738		in <sup>3</sup>





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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	24.9000	8.0000	199.2000	0.5188	0.0000	0.0000	0.5188	
4	Top Cover Plate	16.0000	8.0000	128.0000	682.6667	0.0000	0.0000	682.6667	
4	Bottom Cover Plate	16.0000	8.0000	128.0000	682.6667	0.0000	0.0000	682.6667	
<b>Total</b>		<b>90.65</b>		<b>725.20</b>	<b>1420.59</b>		<b>196.28</b>	<b>1616.87</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	202.11	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	202.11	in <sup>3</sup>
I <sub>y</sub> =	1616.87	in <sup>4</sup>	S <sub>left</sub> =	202.11	in <sup>3</sup>	I <sub>y</sub> =	1616.87	in <sup>4</sup>	S <sub>left</sub> =	202.11	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	90.6500	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	90.6500	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.2233	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.2233	in

Non-composite Capacities*		
	AB	AI
M	5234.00 k-ft	5234.00 k-ft
V	476.59 k	476.59 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 53.8800$  in

$d_o = 48.0000$  in

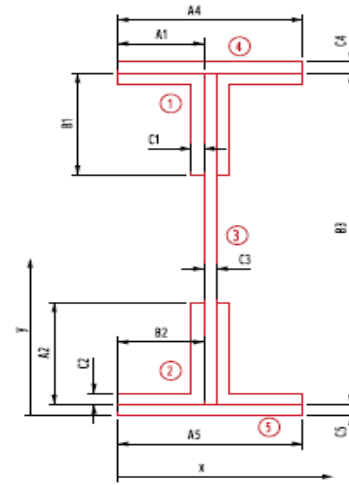
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.6250$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.6250$  in  
 $A_5 = 16.0000$  in



**Girder 21-22 Section 6**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	54.1300	487.1700	0.4219	26.5650	6351.2930	6351.7149
	Vertical Leg	7.8750	51.1300	402.6488	18.0879	23.5650	4373.0601	4391.1480
2	Horizontal Leg	9.0000	1.0000	9.0000	0.4219	26.5650	6351.2930	6351.7149
	Vertical Leg	7.8750	4.0000	31.5000	18.0879	23.5650	4373.0601	4391.1480
3	Web Plate	26.9400	27.5650	742.6011	6517.3571	0.0000	0.0000	6517.3571
4	Cover Plate Top	10.0000	54.8175	548.1750	0.3255	27.2525	7426.9876	7427.3131
	Cover Plate Bottom	10.0000	0.3125	3.1250	0.3255	27.2525	7426.9876	7427.3131
<b>Total</b>		<b>80.69</b>		<b>2224.22</b>	<b>6555.03</b>		<b>36302.68</b>	<b>42857.71</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	27.5650 in	S <sub>top</sub> =	1554.79 in <sup>3</sup>	y-bar =	27.5650 in	S <sub>top</sub> =	1554.79 in <sup>3</sup>
I <sub>x</sub> =	42857.71 in <sup>4</sup>	S <sub>bott.</sub> =	1554.79 in <sup>3</sup>	I <sub>x</sub> =	42857.71 in <sup>4</sup>	S <sub>bott.</sub> =	1554.79 in <sup>3</sup>
C <sub>top</sub> =	27.5650 in	A =	80.6900 in <sup>2</sup>	C <sub>top</sub> =	27.5650 in	A =	80.6900 in <sup>2</sup>
C <sub>bottom</sub> =	27.5650 in	r <sub>x</sub> =	23.0465 in	C <sub>bottom</sub> =	27.5650 in	r <sub>x</sub> =	23.0465 in
J =	11.1773	Z =	1757.2506 in <sup>3</sup>	Z =	1757.2506		in <sup>3</sup>



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Date 3/22/2012  
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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	26.9400	8.0000	215.5200	0.5613	0.0000	0.0000	0.5613	
4	Top Cover Plate	10.0000	8.0000	80.0000	426.6667	0.0000	0.0000	426.6667	
4	Bottom Cover Plate	10.0000	8.0000	80.0000	426.6667	0.0000	0.0000	426.6667	
<b>Total</b>		<b>80.69</b>		<b>645.52</b>	<b>908.63</b>		<b>196.28</b>	<b>1104.91</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	138.11	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	138.11	in <sup>3</sup>
I <sub>y</sub> =	1104.91	in <sup>4</sup>	S <sub>left</sub> =	138.11	in <sup>3</sup>	I <sub>y</sub> =	1104.91	in <sup>4</sup>	S <sub>left</sub> =	138.11	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	80.6900	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	80.6900	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.7004	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.7004	in

Non-composite Capacities*		
	AB	AI
M	4832.44 k-ft	4832.44 k-ft
V	515.63 k	515.63 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 58.4400$  in

$d_o = 51.0000$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.6250$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.6250$  in  
 $A_5 = 16.0000$  in



**Girder 21-22 Section 7**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	58.6900	528.2100	0.4219	28.8450	7488.3062	7488.7281
	Vertical Leg	7.8750	55.6900	438.5588	18.0879	25.8450	5260.2167	5278.3046
2	Horizontal Leg	9.0000	1.0000	9.0000	0.4219	28.8450	7488.3062	7488.7281
	Vertical Leg	7.8750	4.0000	31.5000	18.0879	25.8450	5260.2167	5278.3046
3	Web Plate	29.2200	29.8450	872.0709	8316.0938	0.0000	0.0000	8316.0938
4	Cover Plate Top	10.0000	59.3775	593.7750	0.3255	29.5325	8721.6856	8722.0111
	Cover Plate Bottom	10.0000	0.3125	3.1250	0.3255	29.5325	8721.6856	8722.0111
<b>Total</b>		<b>82.97</b>		<b>2476.24</b>	<b>8353.76</b>		<b>42940.42</b>	<b>51294.18</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	29.8450 in	$S_{top} =$	1718.69 in <sup>3</sup>	y-bar =	29.8450 in	$S_{top} =$	1718.69 in <sup>3</sup>
$I_x =$	51294.18 in <sup>4</sup>	$S_{bott.} =$	1718.69 in <sup>3</sup>	$I_x =$	51294.18 in <sup>4</sup>	$S_{bott.} =$	1718.69 in <sup>3</sup>
$C_{top} =$	29.8450 in	A =	82.9700 in <sup>2</sup>	$C_{top} =$	29.8450 in	A =	82.9700 in <sup>2</sup>
$C_{bottom} =$	29.8450 in	$r_x =$	24.8641 in	$C_{bottom} =$	29.8450 in	$r_x =$	24.8641 in
J =	11.3673	Z =	1943.8230 in <sup>3</sup>			Z =	1943.8230 in <sup>3</sup>



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	29.2200	8.0000	233.7600	0.6088	0.0000	0.0000	0.6088	
4	Top Cover Plate	10.0000	8.0000	80.0000	426.6667	0.0000	0.0000	426.6667	
4	Bottom Cover Plate	10.0000	8.0000	80.0000	426.6667	0.0000	0.0000	426.6667	
<b>Total</b>		<b>82.97</b>		<b>663.76</b>	<b>908.68</b>		<b>196.28</b>	<b>1104.96</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	138.12	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	138.12	in <sup>3</sup>
I <sub>y</sub> =	1104.96	in <sup>4</sup>	S <sub>left</sub> =	138.12	in <sup>3</sup>	I <sub>y</sub> =	1104.96	in <sup>4</sup>	S <sub>left</sub> =	138.12	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	82.9700	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	82.9700	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.6493	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.6493	in

Non-composite Capacities*		
	AB	AI
M	5345.51 k-ft	5345.51 k-ft
V	559.27 k	559.27 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 63.4800$  in

$d_o = 59.0000$  in

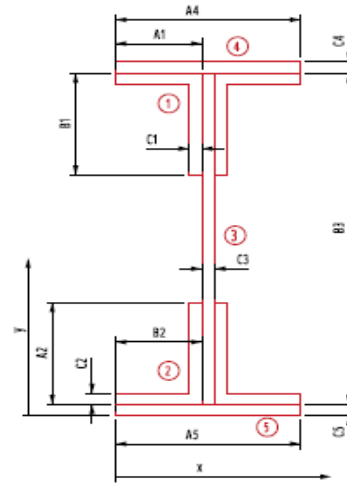
$d_o$  = stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.6250$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.6250$  in  
 $A_5 = 16.0000$  in



**Girder 21-22 Section 8**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	63.7300	573.5700	0.4219	31.3650	8853.8690	8854.2909
	Vertical Leg	7.8750	60.7300	478.2488	18.0879	28.3650	6336.0141	6354.1020
2	Horizontal Leg	9.0000	1.0000	9.0000	0.4219	31.3650	8853.8690	8854.2909
	Vertical Leg	7.8750	4.0000	31.5000	18.0879	28.3650	6336.0141	6354.1020
3	Web Plate	31.7400	32.3650	1027.2651	10658.5840	0.0000	0.0000	10658.5840
4	Cover Plate Top	10.0000	64.4175	644.1750	0.3255	32.0525	10273.6276	10273.9531
	Cover Plate Bottom	10.0000	0.3125	3.1250	0.3255	32.0525	10273.6276	10273.9531
<b>Total</b>		<b>85.49</b>		<b>2766.88</b>	<b>10696.25</b>		<b>50927.02</b>	<b>61623.28</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	32.3650 in	$S_{top} =$	1904.01 in <sup>3</sup>	y-bar =	32.3650 in	$S_{top} =$	1904.01 in <sup>3</sup>
$I_x =$	61623.28 in <sup>4</sup>	$S_{bott.} =$	1904.01 in <sup>3</sup>	$I_x =$	61623.28 in <sup>4</sup>	$S_{bott.} =$	1904.01 in <sup>3</sup>
$C_{top} =$	32.3650 in	A =	85.4900 in <sup>2</sup>	$C_{top} =$	32.3650 in	A =	85.4900 in <sup>2</sup>
$C_{bottom} =$	32.3650 in	$r_x =$	26.8482 in	$C_{bottom} =$	32.3650 in	$r_x =$	26.8482 in
J =	11.5773	Z =	2156.0826 in <sup>3</sup>			Z =	2156.0826 in <sup>3</sup>



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	31.7400	8.0000	253.9200	0.6613	0.0000	0.0000	0.6613	
4	Top Cover Plate	10.0000	8.0000	80.0000	426.6667	0.0000	0.0000	426.6667	
4	Bottom Cover Plate	10.0000	8.0000	80.0000	426.6667	0.0000	0.0000	426.6667	
<b>Total</b>		<b>85.49</b>		<b>683.92</b>	<b>908.73</b>		<b>196.28</b>	<b>1105.01</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	138.13	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	138.13	in <sup>3</sup>
I <sub>y</sub> =	1105.01	in <sup>4</sup>	S <sub>left</sub> =	138.13	in <sup>3</sup>	I <sub>y</sub> =	1105.01	in <sup>4</sup>	S <sub>left</sub> =	138.13	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	85.4900	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	85.4900	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5952	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5952	in

Non-composite Capacities*		
	AB	AI
M	5929.23 k-ft	5929.23 k-ft
V	607.50 k	607.50 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 61.8000$  in

$d_o = 58.5000$  in

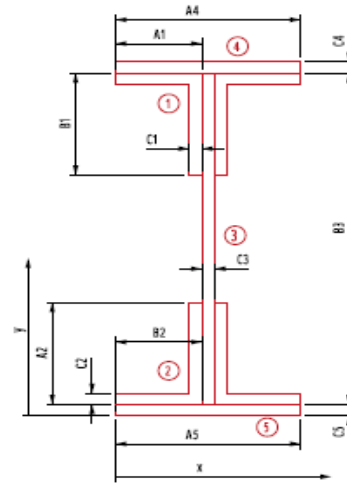
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



**Girder 22-23 Section 1**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	61.9250	557.3250	0.4219	30.5250	8385.9806	8386.4025
	Vertical Leg	7.8750	58.9250	464.0344	18.0879	27.5250	5966.3018	5984.3897
2	Horizontal Leg	9.0000	0.8750	7.8750	0.4219	30.5250	8385.9806	8386.4025
	Vertical Leg	7.8750	3.8750	30.5156	18.0879	27.5250	5966.3018	5984.3897
3	Web Plate	30.9000	31.4000	970.2600	9834.5430	0.0000	0.0000	9834.5430
4	Cover Plate Top	8.0000	62.5500	500.4000	0.1667	31.1500	7762.5800	7762.7467
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	31.1500	7762.5800	7762.7467
<b>Total</b>		<b>80.65</b>		<b>2532.41</b>	<b>9871.90</b>		<b>44229.72</b>	<b>54101.62</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	31.4000 in	$S_{top} =$	1722.98 in <sup>3</sup>	y-bar =	31.4000 in	$S_{top} =$	1722.98 in <sup>3</sup>
$I_x =$	54101.62 in <sup>4</sup>	$S_{bott.} =$	1722.98 in <sup>3</sup>	$I_x =$	54101.62 in <sup>4</sup>	$S_{bott.} =$	1722.98 in <sup>3</sup>
$C_{top} =$	31.4000 in	A =	80.6500 in <sup>2</sup>	$C_{top} =$	31.4000 in	A =	80.6500 in <sup>2</sup>
$C_{bottom} =$	31.4000 in	$r_x =$	25.9002 in	$C_{bottom} =$	31.4000 in	$r_x =$	25.9002 in
J =	10.2365	Z =	1958.7738 in <sup>3</sup>	Z =	1958.7738		in <sup>3</sup>





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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	30.9000	8.0000	247.2000	0.6438	0.0000	0.0000	0.6438	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>80.65</b>		<b>645.20</b>	<b>738.05</b>		<b>196.28</b>	<b>934.33</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	8.0000	in	S <sub>right</sub> = 116.79 in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> = 116.79 in <sup>3</sup>
I <sub>y</sub> =	934.33	in <sup>4</sup>	S <sub>left</sub> = 116.79 in <sup>3</sup>	I <sub>y</sub> =	934.33	in <sup>4</sup>	S <sub>left</sub> = 116.79 in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A = 80.6500 in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A = 80.6500 in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> = 3.4037 in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> = 3.4037 in

Non-composite Capacities*		
	AB	AI
M	5386.63 k-ft	5386.63 k-ft
V	591.43 k	591.43 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

**Top Angles:**  $A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

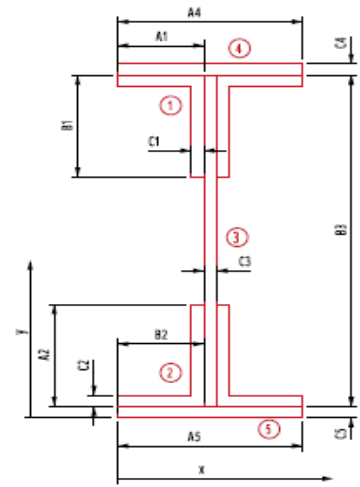
**Bottom Angles:**  $B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

**Web Plate:**  $C_3 = 0.5000$  in  
 $*B_3 = 56.2800$  in

$d_o = 59.2500$  in  
 $d_o =$  stiffener spacing for shear check  
 Use "N/A" for no stiffeners

**Top Cover Plate:**  $C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

**Btm Cover Plate:**  $C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



Girder 22-23 Section 2

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	56.4050	507.6450	0.4219	27.7650	6938.0570	6938.4789
	Vertical Leg	7.8750	53.4050	420.5644	18.0879	24.7650	4829.7786	4847.8665
2	Horizontal Leg	9.0000	0.8750	7.8750	0.4219	27.7650	6938.0570	6938.4789
	Vertical Leg	7.8750	3.8750	30.5156	18.0879	24.7650	4829.7786	4847.8665
3	Web Plate	28.1400	28.6400	805.9296	7427.6430	0.0000	0.0000	7427.6430
4	Cover Plate Top	8.0000	57.0300	456.2400	0.1667	28.3900	6447.9368	6448.1035
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	28.3900	6447.9368	6448.1035
<b>Total</b>		<b>77.89</b>		<b>2230.77</b>	<b>7465.00</b>		<b>36431.54</b>	<b>43896.54</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	28.6400 in	S <sub>top</sub> =	1532.70 in <sup>3</sup>	y-bar =	28.6400 in	S <sub>top</sub> =	1532.70 in <sup>3</sup>
I <sub>x</sub> =	43896.54 in <sup>4</sup>	S <sub>bott.</sub> =	1532.70 in <sup>3</sup>	I <sub>x</sub> =	43896.54 in <sup>4</sup>	S <sub>bott.</sub> =	1532.70 in <sup>3</sup>
C <sub>top</sub> =	28.6400 in	A =	77.8900 in <sup>2</sup>	C <sub>top</sub> =	28.6400 in	A =	77.8900 in <sup>2</sup>
C <sub>bottom</sub> =	28.6400 in	r <sub>x</sub> =	23.7396 in	C <sub>bottom</sub> =	28.6400 in	r <sub>x</sub> =	23.7396 in
J =	10.0065	Z =	1739.9886 in <sup>3</sup>	Z =	1739.9886		in <sup>3</sup>



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Date 3/22/2012  
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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	28.1400	8.0000	225.1200	0.5863	0.0000	0.0000	0.5863	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>77.89</b>		<b>623.12</b>	<b>737.99</b>		<b>196.28</b>	<b>934.27</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	116.78	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	116.78	in <sup>3</sup>
I <sub>y</sub> =	934.27	in <sup>4</sup>	S <sub>left</sub> =	116.78	in <sup>3</sup>	I <sub>y</sub> =	934.27	in <sup>4</sup>	S <sub>left</sub> =	116.78	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	77.8900	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	77.8900	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.4633	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.4633	in

Non-composite Capacities*		
	AB	AI
M	4784.97 k-ft	4784.97 k-ft
V	538.60 k	538.60 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

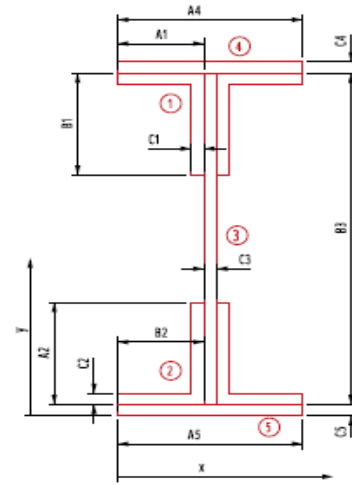
**Top Angles:**  $A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

**Bottom Angles:**  $B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

**Web Plate:**  $C_3 = 0.5000$  in  
 $*B_3 = 50.7600$  in  
 $d_o = 60.0000$  in  
 $d_o =$  stiffener spacing for shear check  
 Use "N/A" for no stiffeners

**Top Cover Plate:**  $C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

**Btm Cover Plate:**  $C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



**Girder 22-23 Section 3**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	50.8850	457.9650	0.4219	25.0050	5627.2502	5627.6721
	Vertical Leg	7.8750	47.8850	377.0944	18.0879	22.0050	3813.2327	3831.3206
2	Horizontal Leg	9.0000	0.8750	7.8750	0.4219	25.0050	5627.2502	5627.6721
	Vertical Leg	7.8750	3.8750	30.5156	18.0879	22.0050	3813.2327	3831.3206
3	Web Plate	25.3800	25.8800	656.8344	5449.4616	0.0000	0.0000	5449.4616
4	Cover Plate Top	8.0000	51.5100	412.0800	0.1667	25.6300	5255.1752	5255.3419
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	25.6300	5255.1752	5255.3419
<b>Total</b>		<b>75.13</b>		<b>1944.36</b>	<b>5486.81</b>		<b>29391.32</b>	<b>34878.13</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	25.8800	in	S <sub>top</sub> = 1347.69 in <sup>3</sup>	y-bar =	25.8800	in	S <sub>top</sub> = 1347.69 in <sup>3</sup>
I <sub>x</sub> =	34878.13	n <sup>4</sup>	S <sub>bott.</sub> = 1347.69 in <sup>3</sup>	I <sub>x</sub> =	34878.13	in <sup>4</sup>	S <sub>bott.</sub> = 1347.69 in <sup>3</sup>
C <sub>top</sub> =	25.8800	in	A = 75.1300 in <sup>2</sup>	C <sub>top</sub> =	25.8800	in	A = 75.1300 in <sup>2</sup>
C <sub>bottom</sub> =	25.8800	in	r <sub>x</sub> = 21.5462 in	C <sub>bottom</sub> =	25.8800	in	r <sub>x</sub> = 21.5462 in
J =	9.7765		Z = 1528.8210 in <sup>3</sup>				Z = 1528.8210 in <sup>3</sup>



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Date 3/22/2012  
 Date 3/30/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	25.3800	8.0000	203.0400	0.5288	0.0000	0.0000	0.5288	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>75.13</b>		<b>601.04</b>	<b>737.93</b>		<b>196.28</b>	<b>934.21</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	116.78	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	116.78	in <sup>3</sup>
I <sub>y</sub> =	934.21	in <sup>4</sup>	S <sub>left</sub> =	116.78	in <sup>3</sup>	I <sub>y</sub> =	934.21	in <sup>4</sup>	S <sub>left</sub> =	116.78	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	75.1300	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	75.1300	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5263	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5263	in

Non-composite Capacities*		
	AB	AI
M	4204.26 k-ft	4204.26 k-ft
V	485.77 k	485.77 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 55.8000$  in

$d_o = 54.0000$  in

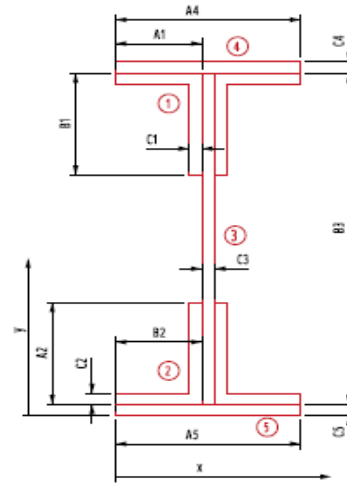
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



Girder 22-23 Section 4

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	55.9250	503.3250	0.4219	27.5250	6818.6306	6819.0525
	Vertical Leg	7.8750	52.9250	416.7844	18.0879	24.5250	4736.6205	4754.7084
2	Horizontal Leg	9.0000	0.8750	7.8750	0.4219	27.5250	6818.6306	6819.0525
	Vertical Leg	7.8750	3.8750	30.5156	18.0879	24.5250	4736.6205	4754.7084
3	Web Plate	27.9000	28.4000	792.3600	7239.2130	0.0000	0.0000	7239.2130
4	Cover Plate Top	8.0000	56.5500	452.4000	0.1667	28.1500	6339.3800	6339.5467
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	28.1500	6339.3800	6339.5467
<b>Total</b>		<b>77.65</b>		<b>2205.26</b>	<b>7276.57</b>		<b>35789.26</b>	<b>43065.83</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	28.4000	in	S <sub>top</sub> =	1516.40	in <sup>3</sup>	y-bar =	28.4000	in	S <sub>top</sub> =	1516.40	in <sup>3</sup>
I <sub>x</sub> =	43065.83	n <sup>4</sup>	S <sub>bott.</sub> =	1516.40	in <sup>3</sup>	I <sub>x</sub> =	43065.83	in <sup>4</sup>	S <sub>bott.</sub> =	1516.40	in <sup>3</sup>
C <sub>top</sub> =	28.4000	in	A =	77.6500	in <sup>2</sup>	C <sub>top</sub> =	28.4000	in	A =	77.6500	in <sup>2</sup>
C <sub>bottom</sub> =	28.4000	in	r <sub>x</sub> =	23.5503	in	C <sub>bottom</sub> =	28.4000	in	r <sub>x</sub> =	23.5503	in
J =	9.9865		Z =	1721.3238	in <sup>3</sup>				Z =	1721.3238	in <sup>3</sup>



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Date 3/22/2012  
 Date 3/30/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	27.9000	8.0000	223.2000	0.5813	0.0000	0.0000	0.5813	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>77.65</b>		<b>621.20</b>	<b>737.99</b>		<b>196.28</b>	<b>934.26</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	116.78	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	116.78	in <sup>3</sup>
I <sub>y</sub> =	934.26	in <sup>4</sup>	S <sub>left</sub> =	116.78	in <sup>3</sup>	I <sub>y</sub> =	934.26	in <sup>4</sup>	S <sub>left</sub> =	116.78	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	77.6500	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	77.6500	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.4687	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.4687	in

Non-composite Capacities*		
	AB	AI
M	4733.64 k-ft	4733.64 k-ft
V	534.01 k	534.01 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 61.4400$  in

$d_o = 64.2300$  in

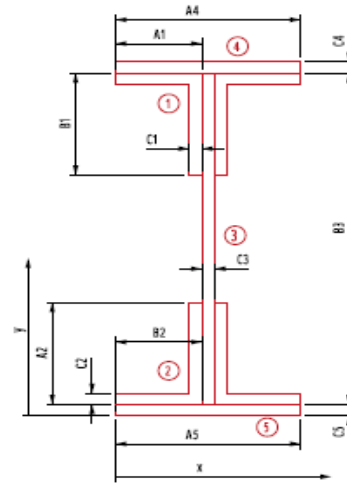
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



**Girder 22-23 Section 5**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg		9.0000	61.5650	554.0850	0.4219	30.3450	8287.3712	8287.7931
	Vertical Leg		7.8750	58.5650	461.1994	18.0879	27.3450	5888.5236	5906.6115
2	Horizontal Leg		9.0000	0.8750	7.8750	0.4219	30.3450	8287.3712	8287.7931
	Vertical Leg		7.8750	3.8750	30.5156	18.0879	27.3450	5888.5236	5906.6115
3	Web Plate		30.7200	31.2200	959.0784	9663.6764	0.0000	0.0000	9663.6764
4	Cover Plate Top		8.0000	62.1900	497.5200	0.1667	30.9700	7673.1272	7673.2939
	Cover Plate Bottom		8.0000	0.2500	2.0000	0.1667	30.9700	7673.1272	7673.2939
<b>Total</b>			<b>80.47</b>		<b>2512.27</b>	<b>9701.03</b>		<b>43698.04</b>	<b>53399.07</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	31.2200 in	$S_{top} =$	1710.41 in <sup>3</sup>	y-bar =	31.2200 in	$S_{top} =$	1710.41 in <sup>3</sup>
$I_x =$	53399.07 in <sup>4</sup>	$S_{bott.} =$	1710.41 in <sup>3</sup>	$I_x =$	53399.07 in <sup>4</sup>	$S_{bott.} =$	1710.41 in <sup>3</sup>
$C_{top} =$	31.2200 in	A =	80.4700 in <sup>2</sup>	$C_{top} =$	31.2200 in	A =	80.4700 in <sup>2</sup>
$C_{bottom} =$	31.2200 in	$r_x =$	25.7602 in	$C_{bottom} =$	31.2200 in	$r_x =$	25.7602 in
J =	10.2215	Z =	1944.2730 in <sup>3</sup>	Z =	1944.2730		in <sup>3</sup>





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Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	30.7200	8.0000	245.7600	0.6400	0.0000	0.0000	0.6400	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>80.47</b>		<b>643.76</b>	<b>738.04</b>		<b>196.28</b>	<b>934.32</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	116.79	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	116.79	in <sup>3</sup>
I <sub>y</sub> =	934.32	in <sup>4</sup>	S <sub>left</sub> =	116.79	in <sup>3</sup>	I <sub>y</sub> =	934.32	in <sup>4</sup>	S <sub>left</sub> =	116.79	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	80.4700	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	80.4700	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.4075	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.4075	in

Non-composite Capacities*		
	AB	AI
M	5346.75 k-ft	5346.75 k-ft
V	587.98 k	587.98 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.3750$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.3750$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 61.3200$  in

$d_o = 52.6900$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



**Girder 23-24 Section 1**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg		4.5000	61.6325	277.3463	0.0527	30.4725	4178.5797	4178.6324
	Vertical Leg		4.2188	58.6325	247.3559	11.1237	27.4725	3184.0520	3195.1757
2	Horizontal Leg		4.5000	0.6875	3.0938	0.0527	30.4725	4178.5797	4178.6324
	Vertical Leg		4.2188	3.6875	15.5566	11.1237	27.4725	3184.0520	3195.1757
3	Web Plate		30.6600	31.1600	955.3656	9607.1638	0.0000	0.0000	9607.1638
4	Cover Plate Top		8.0000	62.0700	496.5600	0.1667	30.9100	7643.4248	7643.5915
	Cover Plate Bottom		8.0000	0.2500	2.0000	0.1667	30.9100	7643.4248	7643.5915
<b>Total</b>			<b>64.10</b>		<b>1997.28</b>	<b>9629.85</b>		<b>30012.11</b>	<b>39641.96</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	31.1600 in	S <sub>top</sub> =	1272.21 in <sup>3</sup>	y-bar =	31.1600 in	S <sub>top</sub> =	1272.21 in <sup>3</sup>
I <sub>x</sub> =	39641.96 in <sup>4</sup>	S <sub>bott.</sub> =	1272.21 in <sup>3</sup>	I <sub>x</sub> =	39641.96 in <sup>4</sup>	S <sub>bott.</sub> =	1272.21 in <sup>3</sup>
C <sub>top</sub> =	31.1600 in	A =	64.0975 in <sup>2</sup>	C <sub>top</sub> =	31.1600 in	A =	64.0975 in <sup>2</sup>
C <sub>bottom</sub> =	31.1600 in	r <sub>x</sub> =	24.8689 in	C <sub>bottom</sub> =	31.1600 in	r <sub>x</sub> =	24.8689 in
J =	4.7057	Z =	1470.6295 in <sup>3</sup>	Z =	1470.6295 in <sup>3</sup>		



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	2.2500	4.7500	10.6875	6.7500	3.2500	23.7656	30.5156	
	Vertical Leg	2.1094	7.5625	15.9521	0.0247	0.4375	0.4037	0.4285	
1 (Right)	Horizontal Leg	2.2500	11.2500	25.3125	6.7500	3.2500	23.7656	30.5156	
	Vertical Leg	2.1094	8.4375	17.7979	0.0247	0.4375	0.4037	0.4285	
2 (Left)	Horizontal Leg	2.2500	4.7500	10.6875	6.7500	3.2500	23.7656	30.5156	
	Vertical Leg	2.1094	7.5625	15.9521	0.0247	0.4375	0.4037	0.4285	
2 (Right)	Horizontal Leg	2.2500	11.2500	25.3125	6.7500	3.2500	23.7656	30.5156	
	Vertical Leg	2.1094	8.4375	17.7979	0.0247	0.4375	0.4037	0.4285	
3	Web Plate	30.6600	8.0000	245.2800	0.6388	0.0000	0.0000	0.6388	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>64.10</b>		<b>512.78</b>	<b>710.40</b>		<b>96.68</b>	<b>807.08</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	100.89	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	100.89	in <sup>3</sup>
I <sub>y</sub> =	807.08	in <sup>4</sup>	S <sub>left</sub> =	100.89	in <sup>3</sup>	I <sub>y</sub> =	807.08	in <sup>4</sup>	S <sub>left</sub> =	100.89	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	64.0975	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	64.0975	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5484	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5484	in

Non-composite Capacities*		
	AB	AI
M	4044.23 k-ft	4044.23 k-ft
V	586.83 k	586.83 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.3750$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.3750$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 56.4000$  in

$d_o = 48.0000$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



Girder 23-24 Section 2

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg		4.5000	56.7125	255.2063	0.0527	28.0125	3531.1507	3531.2034
	Vertical Leg		4.2188	53.7125	226.5996	11.1237	25.0125	2639.3561	2650.4798
2	Horizontal Leg		4.5000	0.6875	3.0938	0.0527	28.0125	3531.1507	3531.2034
	Vertical Leg		4.2188	3.6875	15.5566	11.1237	25.0125	2639.3561	2650.4798
3	Web Plate		28.2000	28.7000	809.3400	7475.2560	0.0000	0.0000	7475.2560
4	Cover Plate Top		8.0000	57.1500	457.2000	0.1667	28.4500	6475.2200	6475.3867
	Cover Plate Bottom		8.0000	0.2500	2.0000	0.1667	28.4500	6475.2200	6475.3867
<b>Total</b>			<b>61.64</b>		<b>1769.00</b>	<b>7497.94</b>		<b>25291.45</b>	<b>32789.40</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	28.7000	in	$S_{top} = 1142.49$ in <sup>3</sup>	y-bar =	28.7000	in	$S_{top} = 1142.49$ in <sup>3</sup>
$I_x =$	32789.40	in <sup>4</sup>	$S_{bott.} = 1142.49$ in <sup>3</sup>	$I_x =$	32789.40	in <sup>4</sup>	$S_{bott.} = 1142.49$ in <sup>3</sup>
$C_{top} =$	28.7000	in	$A = 61.6375$ in <sup>2</sup>	$C_{top} =$	28.7000	in	$A = 61.6375$ in <sup>2</sup>
$C_{bottom} =$	28.7000	in	$r_x = 23.0645$ in	$C_{bottom} =$	28.7000	in	$r_x = 23.0645$ in
$J =$	4.5007		$Z = 1315.9755$ in <sup>3</sup>				$Z = 1315.9755$ in <sup>3</sup>



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	2.2500	4.7500	10.6875	6.7500	3.2500	23.7656	30.5156	
	Vertical Leg	2.1094	7.5625	15.9521	0.0247	0.4375	0.4037	0.4285	
1 (Right)	Horizontal Leg	2.2500	11.2500	25.3125	6.7500	3.2500	23.7656	30.5156	
	Vertical Leg	2.1094	8.4375	17.7979	0.0247	0.4375	0.4037	0.4285	
2 (Left)	Horizontal Leg	2.2500	4.7500	10.6875	6.7500	3.2500	23.7656	30.5156	
	Vertical Leg	2.1094	7.5625	15.9521	0.0247	0.4375	0.4037	0.4285	
2 (Right)	Horizontal Leg	2.2500	11.2500	25.3125	6.7500	3.2500	23.7656	30.5156	
	Vertical Leg	2.1094	8.4375	17.7979	0.0247	0.4375	0.4037	0.4285	
3	Web Plate	28.2000	8.0000	225.6000	0.5875	0.0000	0.0000	0.5875	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>61.64</b>		<b>493.10</b>	<b>710.35</b>		<b>96.68</b>	<b>807.03</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	100.88	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	100.88	in <sup>3</sup>
I <sub>y</sub> =	807.03	in <sup>4</sup>	S <sub>left</sub> =	100.88	in <sup>3</sup>	I <sub>y</sub> =	807.03	in <sup>4</sup>	S <sub>left</sub> =	100.88	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	61.6375	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	61.6375	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.6184	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.6184	in

Non-composite Capacities*		
	AB	AI
M	3618.93 k-ft	3618.93 k-ft
V	539.75 k	539.75 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.3750$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.3750$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 60.8400$  in

$d_o = 65.3750$  in

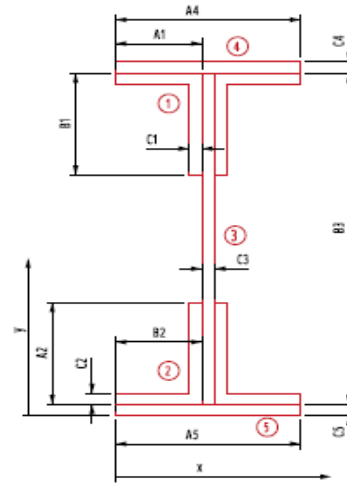
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



Girder 23-24 Section 3

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	4.5000	61.1525	275.1863	0.0527	30.2325	4113.0183	4113.0710
	Vertical Leg	4.2188	58.1525	245.3309	11.1237	27.2325	3128.6632	3139.7869
2	Horizontal Leg	4.5000	0.6875	3.0938	0.0527	30.2325	4113.0183	4113.0710
	Vertical Leg	4.2188	3.6875	15.5566	11.1237	27.2325	3128.6632	3139.7869
3	Web Plate	30.4200	30.9200	940.5864	9383.3167	0.0000	0.0000	9383.3167
4	Cover Plate Top	8.0000	61.5900	492.7200	0.1667	30.6700	7525.1912	7525.3579
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	30.6700	7525.1912	7525.3579
<b>Total</b>		<b>63.86</b>		<b>1974.47</b>	<b>9406.00</b>		<b>29533.75</b>	<b>38939.75</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	30.9200 in	S <sub>top</sub> =	1259.37 in <sup>3</sup>	y-bar =	30.9200 in	S <sub>top</sub> =	1259.37 in <sup>3</sup>
I <sub>x</sub> =	38939.75 in <sup>4</sup>	S <sub>bott.</sub> =	1259.37 in <sup>3</sup>	I <sub>x</sub> =	38939.75 in <sup>4</sup>	S <sub>bott.</sub> =	1259.37 in <sup>3</sup>
C <sub>top</sub> =	30.9200 in	A =	63.8575 in <sup>2</sup>	C <sub>top</sub> =	30.9200 in	A =	63.8575 in <sup>2</sup>
C <sub>bottom</sub> =	30.9200 in	r <sub>x</sub> =	24.6940 in	C <sub>bottom</sub> =	30.9200 in	r <sub>x</sub> =	24.6940 in
J =	4.6857	Z =	1455.2749 in <sup>3</sup>	Z =	1455.2749		in <sup>3</sup>



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Date 3/22/2012  
 Date 3/30/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	2.2500	4.7500	10.6875	6.7500	3.2500	23.7656	30.5156	
	Vertical Leg	2.1094	7.5625	15.9521	0.0247	0.4375	0.4037	0.4285	
1 (Right)	Horizontal Leg	2.2500	11.2500	25.3125	6.7500	3.2500	23.7656	30.5156	
	Vertical Leg	2.1094	8.4375	17.7979	0.0247	0.4375	0.4037	0.4285	
2 (Left)	Horizontal Leg	2.2500	4.7500	10.6875	6.7500	3.2500	23.7656	30.5156	
	Vertical Leg	2.1094	7.5625	15.9521	0.0247	0.4375	0.4037	0.4285	
2 (Right)	Horizontal Leg	2.2500	11.2500	25.3125	6.7500	3.2500	23.7656	30.5156	
	Vertical Leg	2.1094	8.4375	17.7979	0.0247	0.4375	0.4037	0.4285	
3	Web Plate	30.4200	8.0000	243.3600	0.6338	0.0000	0.0000	0.6338	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>63.86</b>		<b>510.86</b>	<b>710.40</b>		<b>96.68</b>	<b>807.08</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	100.88	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	100.88	in <sup>3</sup>
I <sub>y</sub> =	807.08	in <sup>4</sup>	S <sub>left</sub> =	100.88	in <sup>3</sup>	I <sub>y</sub> =	807.08	in <sup>4</sup>	S <sub>left</sub> =	100.88	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	63.8575	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	63.8575	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5551	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5551	in

Non-composite Capacities*		
	AB	AI
M	4002.01 k-ft	4002.01 k-ft
V	582.24 k	582.24 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.5000$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.5000$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 61.9200$  in

$d_o = 65.8750$  in

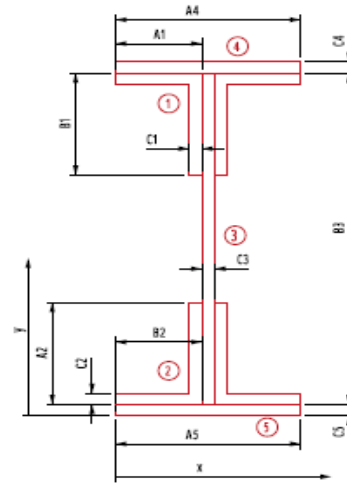
$d_o$  = stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



Girder 24-25 Section 1

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	6.0000	62.1700	373.0200	0.1250	30.7100	5658.6246	5658.7496
	Vertical Leg	5.5000	59.1700	325.4350	13.8646	27.7100	4223.1426	4237.0071
2	Horizontal Leg	6.0000	0.7500	4.5000	0.1250	30.7100	5658.6246	5658.7496
	Vertical Leg	5.5000	3.7500	20.6250	13.8646	27.7100	4223.1426	4237.0071
3	Web Plate	30.9600	31.4600	974.0016	9891.9429	0.0000	0.0000	9891.9429
4	Cover Plate Top	8.0000	62.6700	501.3600	0.1667	31.2100	7792.5128	7792.6795
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	31.2100	7792.5128	7792.6795
<b>Total</b>		<b>69.96</b>		<b>2200.94</b>	<b>9920.26</b>		<b>35348.56</b>	<b>45268.82</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	31.4600	in	$S_{top} = 1438.93$	in <sup>3</sup>	y-bar =	31.4600	in	$S_{top} = 1438.93$	in <sup>3</sup>		
$I_x =$	45268.82	in <sup>4</sup>	$S_{bott.} = 1438.93$	in <sup>3</sup>	$I_x =$	45268.82	in <sup>4</sup>	$S_{bott.} = 1438.93$	in <sup>3</sup>		
$C_{top} =$	31.4600	in	A =	69.9600	in <sup>2</sup>	$C_{top} =$	31.4600	in	A =	69.9600	in <sup>2</sup>
$C_{bottom} =$	31.4600	in	$r_x =$	25.4375	in	$C_{bottom} =$	31.4600	in	$r_x =$	25.4375	in
J =	5.8300		Z =	1651.9508	in <sup>3</sup>				Z =	1651.9508	in <sup>3</sup>





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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448	
1 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448	
2 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448	
2 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448	
3	Web Plate	30.9600	8.0000	247.6800	0.6450	0.0000	0.0000	0.6450	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>69.96</b>		<b>559.68</b>	<b>719.54</b>		<b>129.50</b>	<b>849.04</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	106.13	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	106.13	in <sup>3</sup>
I <sub>y</sub> =	849.04	in <sup>4</sup>	S <sub>left</sub> =	106.13	in <sup>3</sup>	I <sub>y</sub> =	849.04	in <sup>4</sup>	S <sub>left</sub> =	106.13	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	69.9600	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	69.9600	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.4837	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.4837	in

Non-composite Capacities*		
	AB	AI
M	4542.86 k-ft	4542.86 k-ft
V	592.57 k	592.57 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
------------------	-----------

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.5000$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.5000$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 56.7600$  in

$d_o = 58.0000$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



Girder 24-25 Section 2

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	6.0000	57.0100	342.0600	0.1250	28.1300	4747.7814	4747.9064
	Vertical Leg	5.5000	54.0100	297.0550	13.8646	25.1300	3473.3430	3487.2075
2	Horizontal Leg	6.0000	0.7500	4.5000	0.1250	28.1300	4747.7814	4747.9064
	Vertical Leg	5.5000	3.7500	20.6250	13.8646	25.1300	3473.3430	3487.2075
3	Web Plate	28.3800	28.8800	819.6144	7619.3148	0.0000	0.0000	7619.3148
4	Cover Plate Top	8.0000	57.5100	460.0800	0.1667	28.6300	6557.4152	6557.5819
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	28.6300	6557.4152	6557.5819
<b>Total</b>		<b>67.38</b>		<b>1945.93</b>	<b>7647.63</b>		<b>29557.08</b>	<b>37204.71</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	28.8800 in	S <sub>top</sub> =	1288.25 in <sup>3</sup>	y-bar =	28.8800 in	S <sub>top</sub> =	1288.25 in <sup>3</sup>
I <sub>x</sub> =	37204.71 in <sup>4</sup>	S <sub>bott.</sub> =	1288.25 in <sup>3</sup>	I <sub>x</sub> =	37204.71 in <sup>4</sup>	S <sub>bott.</sub> =	1288.25 in <sup>3</sup>
C <sub>top</sub> =	28.8800 in	A =	67.3800 in <sup>2</sup>	C <sub>top</sub> =	28.8800 in	A =	67.3800 in <sup>2</sup>
C <sub>bottom</sub> =	28.8800 in	r <sub>x</sub> =	23.4981 in	C <sub>bottom</sub> =	28.8800 in	r <sub>x</sub> =	23.4981 in
J =	5.6150	Z =	1474.7822 in <sup>3</sup>			Z =	1474.7822 in <sup>3</sup>



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Date 3/22/2012  
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Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448	
1 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448	
2 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448	
2 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448	
3	Web Plate	28.3800	8.0000	227.0400	0.5913	0.0000	0.0000	0.5913	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>67.38</b>		<b>539.04</b>	<b>719.49</b>		<b>129.50</b>	<b>848.99</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	106.12	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	106.12	in <sup>3</sup>
I <sub>y</sub> =	848.99	in <sup>4</sup>	S <sub>left</sub> =	106.12	in <sup>3</sup>	I <sub>y</sub> =	848.99	in <sup>4</sup>	S <sub>left</sub> =	106.12	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	67.3800	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	67.3800	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5496	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5496	in

Non-composite Capacities*		
	AB	AI
M	4055.65 k-ft	4055.65 k-ft
V	543.19 k	543.19 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.5000$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.5000$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 52.2000$  in

$d_o = 48.0000$  in

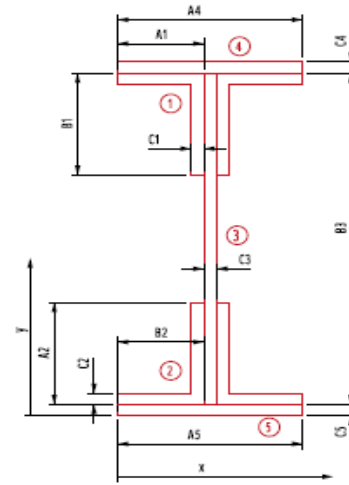
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



Girder 24-25 Section 3

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	6.0000	52.4500	314.7000	0.1250	25.8500	4009.3350	4009.4600
	Vertical Leg	5.5000	49.4500	271.9750	13.8646	22.8500	2871.6738	2885.5383
2	Horizontal Leg	6.0000	0.7500	4.5000	0.1250	25.8500	4009.3350	4009.4600
	Vertical Leg	5.5000	3.7500	20.6250	13.8646	22.8500	2871.6738	2885.5383
3	Web Plate	26.1000	26.6000	694.2600	5926.5270	0.0000	0.0000	5926.5270
4	Cover Plate Top	8.0000	52.9500	423.6000	0.1667	26.3500	5554.5800	5554.7467
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	26.3500	5554.5800	5554.7467
<b>Total</b>		<b>65.10</b>		<b>1731.66</b>	<b>5954.84</b>		<b>24871.18</b>	<b>30826.02</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	26.6000	in	$S_{top} = 1158.87$	in <sup>3</sup>	y-bar =	26.6000	in	$S_{top} = 1158.87$	in <sup>3</sup>		
$I_x =$	30826.02	n <sup>4</sup>	$S_{bott.} = 1158.87$	in <sup>3</sup>	$I_x =$	30826.02	in <sup>4</sup>	$S_{bott.} = 1158.87$	in <sup>3</sup>		
$C_{top} =$	26.6000	in	A =	65.1000	in <sup>2</sup>	$C_{top} =$	26.6000	in	A =	65.1000	in <sup>2</sup>
$C_{bottom} =$	26.6000	in	$r_x =$	21.7605	in	$C_{bottom} =$	26.6000	in	$r_x =$	21.7605	in
J =	5.4250		Z =	1323.7550	in <sup>3</sup>			Z =	1323.7550	in <sup>3</sup>	



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448	
1 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448	
2 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448	
2 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448	
3	Web Plate	26.1000	8.0000	208.8000	0.5438	0.0000	0.0000	0.5438	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>65.10</b>		<b>520.80</b>	<b>719.44</b>		<b>129.50</b>	<b>848.94</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	106.12	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	106.12	in <sup>3</sup>
I <sub>y</sub> =	848.94	in <sup>4</sup>	S <sub>left</sub> =	106.12	in <sup>3</sup>	I <sub>y</sub> =	848.94	in <sup>4</sup>	S <sub>left</sub> =	106.12	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	65.1000	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	65.1000	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.6112	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.6112	in

Non-composite Capacities*		
	AB	AI
M	3640.33 k-ft	3640.33 k-ft
V	499.55 k	499.55 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.5000$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.5000$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 49.2000$  in

$d_o = 48.0000$  in

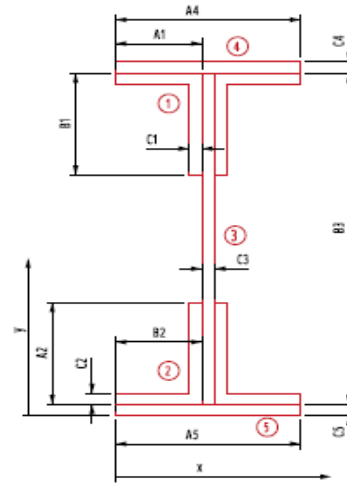
$d_o$  = stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 1.6250$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 1.6250$  in  
 $A_5 = 16.0000$  in



**Girder 24-25 Section 3**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg		6.0000	50.5750	303.4500	0.1250	24.3500	3557.5350	3557.6600
	Vertical Leg		5.5000	47.5750	261.6625	13.8646	21.3500	2507.0238	2520.8883
2	Horizontal Leg		6.0000	1.8750	11.2500	0.1250	24.3500	3557.5350	3557.6600
	Vertical Leg		5.5000	4.8750	26.8125	13.8646	21.3500	2507.0238	2520.8883
3	Web Plate		24.6000	26.2250	645.1350	4962.3120	0.0000	0.0000	4962.3120
4	Cover Plate Top		26.0000	51.6375	1342.5750	5.7214	25.4125	16790.6741	16796.3954
	Cover Plate Bottom		26.0000	0.8125	21.1250	5.7214	25.4125	16790.6741	16796.3954
<b>Total</b>			<b>99.60</b>		<b>2612.01</b>	<b>5001.73</b>		<b>45710.47</b>	<b>50712.20</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	26.2250	in	$S_{top} = 1933.73$ in <sup>3</sup>	y-bar =	26.2250	in	$S_{top} = 1933.73$ in <sup>3</sup>
$I_x =$	50712.20	n <sup>4</sup>	$S_{bott.} = 1933.73$ in <sup>3</sup>	$I_x =$	50712.20	in <sup>4</sup>	$S_{bott.} = 1933.73$ in <sup>3</sup>
$C_{top} =$	26.2250	in	A = 99.6000 in <sup>2</sup>	$C_{top} =$	26.2250	in	A = 99.6000 in <sup>2</sup>
$C_{bottom} =$	26.2250	in	$r_x = 22.5645$ in	$C_{bottom} =$	26.2250	in	$r_x = 22.5645$ in
J =	49.7375		Z = 2151.0800 in <sup>3</sup>				Z = 2151.0800 in <sup>3</sup>



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Date 3/22/2012  
 Date 3/30/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448	
1 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448	
2 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448	
2 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448	
3	Web Plate	24.6000	8.0000	196.8000	0.5125	0.0000	0.0000	0.5125	
4	Top Cover Plate	26.0000	8.0000	208.0000	1109.3333	0.0000	0.0000	1109.3333	
4	Bottom Cover Plate	26.0000	8.0000	208.0000	1109.3333	0.0000	0.0000	1109.3333	
<b>Total</b>		<b>99.60</b>		<b>796.80</b>	<b>2255.41</b>		<b>129.50</b>	<b>2384.91</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	298.11	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	298.11	in <sup>3</sup>
I <sub>y</sub> =	2384.91	in <sup>4</sup>	S <sub>left</sub> =	298.11	in <sup>3</sup>	I <sub>y</sub> =	2384.91	in <sup>4</sup>	S <sub>left</sub> =	298.11	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	99.6000	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	99.6000	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.8933	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.8933	in

Non-composite Capacities*		
	AB	AI
M	5915.47 k-ft	5915.47 k-ft
V	470.84 k	470.84 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



Made By CTG  
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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.5000$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.5000$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 52.2000$  in

$d_o = 48.0000$  in

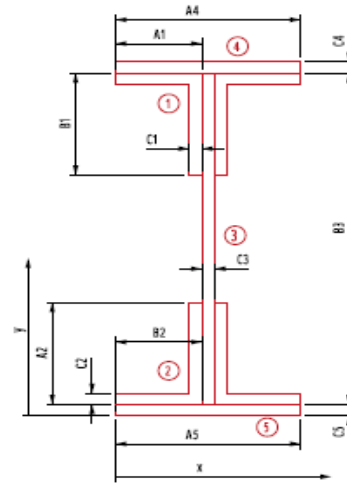
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



Girder 24-25 Section 5

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	6.0000	52.4500	314.7000	0.1250	25.8500	4009.3350	4009.4600
	Vertical Leg	5.5000	49.4500	271.9750	13.8646	22.8500	2871.6738	2885.5383
2	Horizontal Leg	6.0000	0.7500	4.5000	0.1250	25.8500	4009.3350	4009.4600
	Vertical Leg	5.5000	3.7500	20.6250	13.8646	22.8500	2871.6738	2885.5383
3	Web Plate	26.1000	26.6000	694.2600	5926.5270	0.0000	0.0000	5926.5270
4	Cover Plate Top	8.0000	52.9500	423.6000	0.1667	26.3500	5554.5800	5554.7467
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	26.3500	5554.5800	5554.7467
<b>Total</b>		<b>65.10</b>		<b>1731.66</b>	<b>5954.84</b>		<b>24871.18</b>	<b>30826.02</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	26.6000	in	S <sub>top</sub> = 1158.87 in <sup>3</sup>	y-bar =	26.6000	in	S <sub>top</sub> = 1158.87 in <sup>3</sup>
I <sub>x</sub> =	30826.02	n <sup>4</sup>	S <sub>bott.</sub> = 1158.87 in <sup>3</sup>	I <sub>x</sub> =	30826.02	in <sup>4</sup>	S <sub>bott.</sub> = 1158.87 in <sup>3</sup>
C <sub>top</sub> =	26.6000	in	A = 65.1000 in <sup>2</sup>	C <sub>top</sub> =	26.6000	in	A = 65.1000 in <sup>2</sup>
C <sub>bottom</sub> =	26.6000	in	r <sub>x</sub> = 21.7605 in	C <sub>bottom</sub> =	26.6000	in	r <sub>x</sub> = 21.7605 in
J =	5.4250		Z = 1323.7550 in <sup>3</sup>				Z = 1323.7550 in <sup>3</sup>





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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448	
1 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448	
2 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448	
2 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448	
3	Web Plate	26.1000	8.0000	208.8000	0.5438	0.0000	0.0000	0.5438	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>65.10</b>		<b>520.80</b>	<b>719.44</b>		<b>129.50</b>	<b>848.94</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	106.12	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	106.12	in <sup>3</sup>
I <sub>y</sub> =	848.94	in <sup>4</sup>	S <sub>left</sub> =	106.12	in <sup>3</sup>	I <sub>y</sub> =	848.94	in <sup>4</sup>	S <sub>left</sub> =	106.12	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	65.1000	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	65.1000	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.6112	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.6112	in

Non-composite Capacities*		
	AB	AI
M	3640.33 k-ft	3640.33 k-ft
V	499.55 k	499.55 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.5000$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.5000$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 56.7600$  in

$d_o = 58.0000$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



Girder 24-25 Section 6

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg		6.0000	57.0100	342.0600	0.1250	28.1300	4747.7814	4747.9064
	Vertical Leg		5.5000	54.0100	297.0550	13.8646	25.1300	3473.3430	3487.2075
2	Horizontal Leg		6.0000	0.7500	4.5000	0.1250	28.1300	4747.7814	4747.9064
	Vertical Leg		5.5000	3.7500	20.6250	13.8646	25.1300	3473.3430	3487.2075
3	Web Plate		28.3800	28.8800	819.6144	7619.3148	0.0000	0.0000	7619.3148
4	Cover Plate Top		8.0000	57.5100	460.0800	0.1667	28.6300	6557.4152	6557.5819
	Cover Plate Bottom		8.0000	0.2500	2.0000	0.1667	28.6300	6557.4152	6557.5819
<b>Total</b>			<b>67.38</b>		<b>1945.93</b>	<b>7647.63</b>		<b>29557.08</b>	<b>37204.71</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	28.8800 in	S <sub>top</sub> =	1288.25 in <sup>3</sup>	y-bar =	28.8800 in	S <sub>top</sub> =	1288.25 in <sup>3</sup>
I <sub>x</sub> =	37204.71 in <sup>4</sup>	S <sub>bottom</sub> =	1288.25 in <sup>3</sup>	I <sub>x</sub> =	37204.71 in <sup>4</sup>	S <sub>bottom</sub> =	1288.25 in <sup>3</sup>
C <sub>top</sub> =	28.8800 in	A =	67.3800 in <sup>2</sup>	C <sub>top</sub> =	28.8800 in	A =	67.3800 in <sup>2</sup>
C <sub>bottom</sub> =	28.8800 in	r <sub>x</sub> =	23.4981 in	C <sub>bottom</sub> =	28.8800 in	r <sub>x</sub> =	23.4981 in
J =	5.6150	Z =	1474.7822 in <sup>3</sup>			Z =	1474.7822 in <sup>3</sup>



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Date 3/22/2012  
 Date 3/30/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448	
1 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448	
2 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448	
2 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448	
3	Web Plate	28.3800	8.0000	227.0400	0.5913	0.0000	0.0000	0.5913	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>67.38</b>		<b>539.04</b>	<b>719.49</b>		<b>129.50</b>	<b>848.99</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	106.12	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	106.12	in <sup>3</sup>
I <sub>y</sub> =	848.99	in <sup>4</sup>	S <sub>left</sub> =	106.12	in <sup>3</sup>	I <sub>y</sub> =	848.99	in <sup>4</sup>	S <sub>left</sub> =	106.12	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	67.3800	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	67.3800	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5496	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5496	in

Non-composite Capacities*		
	AB	AI
M	4055.65 k-ft	4055.65 k-ft
V	543.19 k	543.19 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/22/2012  
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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.5000$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.5000$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 61.9200$  in

$d_o = 66.0000$  in

$d_o$  = stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



Girder 24-25 Section 7

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg		6.0000	62.1700	373.0200	0.1250	30.7100	5658.6246	5658.7496
	Vertical Leg		5.5000	59.1700	325.4350	13.8646	27.7100	4223.1426	4237.0071
2	Horizontal Leg		6.0000	0.7500	4.5000	0.1250	30.7100	5658.6246	5658.7496
	Vertical Leg		5.5000	3.7500	20.6250	13.8646	27.7100	4223.1426	4237.0071
3	Web Plate		30.9600	31.4600	974.0016	9891.9429	0.0000	0.0000	9891.9429
4	Cover Plate Top		8.0000	62.6700	501.3600	0.1667	31.2100	7792.5128	7792.6795
	Cover Plate Bottom		8.0000	0.2500	2.0000	0.1667	31.2100	7792.5128	7792.6795
<b>Total</b>			<b>69.96</b>		<b>2200.94</b>	<b>9920.26</b>		<b>35348.56</b>	<b>45268.82</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	31.4600 in	$S_{top} =$	1438.93 in <sup>3</sup>	y-bar =	31.4600 in	$S_{top} =$	1438.93 in <sup>3</sup>
$I_x =$	45268.82 in <sup>4</sup>	$S_{bott.} =$	1438.93 in <sup>3</sup>	$I_x =$	45268.82 in <sup>4</sup>	$S_{bott.} =$	1438.93 in <sup>3</sup>
$C_{top} =$	31.4600 in	A =	69.9600 in <sup>2</sup>	$C_{top} =$	31.4600 in	A =	69.9600 in <sup>2</sup>
$C_{bottom} =$	31.4600 in	$r_x =$	25.4375 in	$C_{bottom} =$	31.4600 in	$r_x =$	25.4375 in
J =	5.8300	Z =	1651.9508 in <sup>3</sup>			Z =	1651.9508 in <sup>3</sup>



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Date 3/22/2012  
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Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448	
1 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448	
2 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448	
2 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448	
3	Web Plate	30.9600	8.0000	247.6800	0.6450	0.0000	0.0000	0.6450	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>69.96</b>		<b>559.68</b>	<b>719.54</b>		<b>129.50</b>	<b>849.04</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	106.13	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	106.13	in <sup>3</sup>
I <sub>y</sub> =	849.04	in <sup>4</sup>	S <sub>left</sub> =	106.13	in <sup>3</sup>	I <sub>y</sub> =	849.04	in <sup>4</sup>	S <sub>left</sub> =	106.13	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	69.9600	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	69.9600	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.4837	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.4837	in

Non-composite Capacities*		
	AB	AI
M	4542.86 k-ft	4542.86 k-ft
V	592.57 k	592.57 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.3750$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.3750$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.3750$  in  
 $*B_3 = 60.6000$  in

$d_o = 51.4375$  in

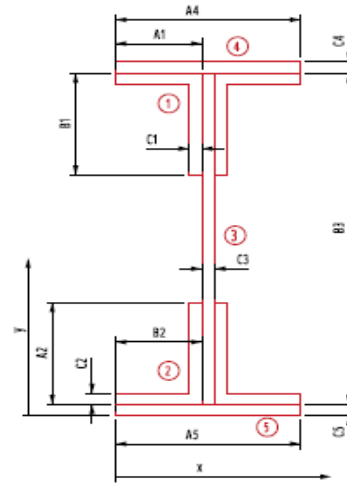
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



Girder 25-26 Section 1

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	4.5000	60.9125	274.1063	0.0527	30.1125	4080.4320	4080.4847
	Vertical Leg	4.2188	57.9125	244.3184	11.1237	27.1125	3101.1510	3112.2747
2	Horizontal Leg	4.5000	0.6875	3.0938	0.0527	30.1125	4080.4320	4080.4847
	Vertical Leg	4.2188	3.6875	15.5566	11.1237	27.1125	3101.1510	3112.2747
3	Web Plate	22.7250	30.8000	699.9300	6954.5318	0.0000	0.0000	6954.5318
4	Cover Plate Top	8.0000	61.3500	490.8000	0.1667	30.5500	7466.4200	7466.5867
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	30.5500	7466.4200	7466.5867
<b>Total</b>		<b>56.16</b>		<b>1729.81</b>	<b>6977.22</b>		<b>29296.01</b>	<b>36273.22</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	30.8000 in	S <sub>top</sub> =	1177.70 in <sup>3</sup>	y-bar =	30.8000 in	S <sub>top</sub> =	1177.70 in <sup>3</sup>
I <sub>x</sub> =	36273.22 in <sup>4</sup>	S <sub>bott.</sub> =	1177.70 in <sup>3</sup>	I <sub>x</sub> =	36273.22 in <sup>4</sup>	S <sub>bott.</sub> =	1177.70 in <sup>3</sup>
C <sub>top</sub> =	30.8000 in	A =	56.1625 in <sup>2</sup>	C <sub>top</sub> =	30.8000 in	A =	56.1625 in <sup>2</sup>
C <sub>bottom</sub> =	30.8000 in	r <sub>x</sub> =	25.4138 in	C <sub>bottom</sub> =	30.8000 in	r <sub>x</sub> =	25.4138 in
J =	3.2160	Z =	1332.8580 in <sup>3</sup>	Z =	1332.8580 in <sup>3</sup>		



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Date 3/22/2012  
 Date 3/30/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	2.2500	4.8125	10.8281	6.7500	3.1875	22.8604	29.6104	
	Vertical Leg	2.1094	7.6250	16.0840	0.0247	0.3750	0.2966	0.3214	
1 (Right)	Horizontal Leg	2.2500	11.1875	25.1719	6.7500	3.1875	22.8604	29.6104	
	Vertical Leg	2.1094	8.3750	17.6660	0.0247	0.3750	0.2966	0.3214	
2 (Left)	Horizontal Leg	2.2500	4.8125	10.8281	6.7500	3.1875	22.8604	29.6104	
	Vertical Leg	2.1094	7.6250	16.0840	0.0247	0.3750	0.2966	0.3214	
2 (Right)	Horizontal Leg	2.2500	11.1875	25.1719	6.7500	3.1875	22.8604	29.6104	
	Vertical Leg	2.1094	8.3750	17.6660	0.0247	0.3750	0.2966	0.3214	
3	Web Plate	22.7250	8.0000	181.8000	0.2663	0.0000	0.0000	0.2663	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>56.16</b>		<b>449.30</b>	<b>710.03</b>		<b>92.63</b>	<b>802.66</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	100.33	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	100.33	in <sup>3</sup>
I <sub>y</sub> =	802.66	in <sup>4</sup>	S <sub>left</sub> =	100.33	in <sup>3</sup>	I <sub>y</sub> =	802.66	in <sup>4</sup>	S <sub>left</sub> =	100.33	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	56.1625	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	56.1625	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.7804	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.7804	in

Non-composite Capacities*		
	AB	AI
M	3238.68 k-ft	3238.68 k-ft
V	383.03 k	383.03 k

\*Noncompact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.3750$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.3750$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.3750$  in  
 $*B_3 = 61.8000$  in

$d_o = 43.6900$  in

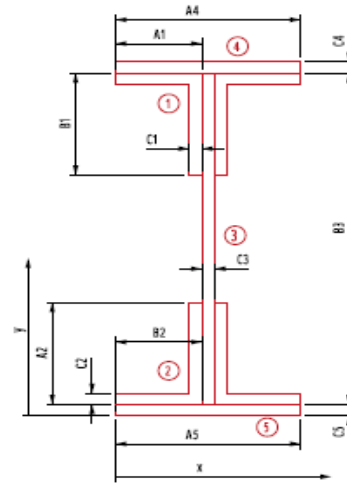
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.0000$  in  
 $A_5 = 0.0000$  in



Girder 25-26 Section 2

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	4.5000	61.6125	277.2563	0.0527	25.5862	2945.9520	2946.0048
	Vertical Leg	4.2188	58.6125	247.2715	11.1237	22.5862	2152.1469	2163.2706
2	Horizontal Leg	4.5000	0.1875	0.8438	0.0527	35.8388	5779.8731	5779.9259
	Vertical Leg	4.2188	3.1875	13.4473	11.1237	32.8388	4549.4314	4560.5550
3	Web Plate	23.1750	30.9000	716.1075	7375.9073	5.1263	609.0037	7984.9109
4	Cover Plate Top	8.0000	62.0500	496.4000	0.1667	26.0237	5417.8830	5418.0497
	Cover Plate Bottom	0.0000	0.0000	0.0000	0.0000	36.0263	0.0000	0.0000
<b>Total</b>		<b>48.61</b>		<b>1751.33</b>	<b>7398.43</b>		<b>21454.29</b>	<b>28852.72</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	36.0263	in	$S_{top} = 1098.16$	in <sup>3</sup>	y-bar =	36.0263	in	$S_{top} = 1098.16$	in <sup>3</sup>		
$I_x =$	28852.72	n <sup>4</sup>	$S_{bott.} = 800.88$	in <sup>3</sup>	$I_x =$	28852.72	in <sup>4</sup>	$S_{bott.} = 800.88$	in <sup>3</sup>		
$C_{top} =$	26.2737	in	A =	48.6125	in <sup>2</sup>	$C_{top} =$	26.2737	in	A =	48.6125	in <sup>2</sup>
$C_{bottom} =$	36.0263	in	$r_x =$	24.3624	in	$C_{bottom} =$	36.0263	in	$r_x =$	24.3624	in
J =	2.5704		Z =	1074.8238	in <sup>3</sup>				Z =	1074.8238	in <sup>3</sup>





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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	2.2500	4.8125	10.8281	6.7500	3.1875	22.8604	29.6104	
	Vertical Leg	2.1094	7.6250	16.0840	0.0247	0.3750	0.2966	0.3214	
1 (Right)	Horizontal Leg	2.2500	11.1875	25.1719	6.7500	3.1875	22.8604	29.6104	
	Vertical Leg	2.1094	8.3750	17.6660	0.0247	0.3750	0.2966	0.3214	
2 (Left)	Horizontal Leg	2.2500	4.8125	10.8281	6.7500	3.1875	22.8604	29.6104	
	Vertical Leg	2.1094	7.6250	16.0840	0.0247	0.3750	0.2966	0.3214	
2 (Right)	Horizontal Leg	2.2500	11.1875	25.1719	6.7500	3.1875	22.8604	29.6104	
	Vertical Leg	2.1094	8.3750	17.6660	0.0247	0.3750	0.2966	0.3214	
3	Web Plate	23.1750	8.0000	185.4000	0.2716	0.0000	0.0000	0.2716	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	0.0000	8.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
<b>Total</b>		<b>48.61</b>		<b>388.90</b>	<b>368.70</b>		<b>92.63</b>	<b>461.33</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	57.67	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	57.67	in <sup>3</sup>
I <sub>y</sub> =	461.33	in <sup>4</sup>	S <sub>left</sub> =	57.67	in <sup>3</sup>	I <sub>y</sub> =	461.33	in <sup>4</sup>	S <sub>left</sub> =	57.67	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	48.6125	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	48.6125	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.0806	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.0806	in

Non-composite Capacities*		
	AB	AI
M	2202.42 k-ft	2202.42 k-ft
V	427.33 k	427.33 k

\*Noncompact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

**Top Angles:**  $A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

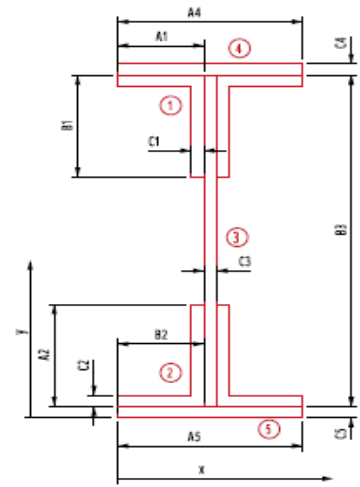
**Bottom Angles:**  $B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

**Web Plate:**  $C_3 = 0.5000$  in  
 $*B_3 = 62.5200$  in

$d_o = 63.3750$  in  
 $d_o =$  stiffener spacing for shear check  
 Use "N/A" for no stiffeners

**Top Cover Plate:**  $C_4 = 0.8750$  in  
 $A_4 = 16.0000$  in

**Btm Cover Plate:**  $C_5 = 0.8750$  in  
 $A_5 = 16.0000$  in



**Girder 26-27 Section 1**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	63.0200	567.1800	0.4219	30.8850	8584.9490	8585.3709
	Vertical Leg	7.8750	60.0200	472.6575	18.0879	27.8850	6123.3891	6141.4770
2	Horizontal Leg	9.0000	1.2500	11.2500	0.4219	30.8850	8584.9490	8585.3709
	Vertical Leg	7.8750	4.2500	33.4688	18.0879	27.8850	6123.3891	6141.4770
3	Web Plate	31.2600	32.1350	1004.5401	10182.2948	0.0000	0.0000	10182.2948
4	Cover Plate Top	14.0000	63.8325	893.6550	0.8932	31.6975	14066.2411	14067.1343
	Cover Plate Bottom	14.0000	0.4375	6.1250	0.8932	31.6975	14066.2411	14067.1343
<b>Total</b>		<b>93.01</b>		<b>2988.88</b>	<b>10221.10</b>		<b>57549.16</b>	<b>67770.26</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	32.1350	in	S <sub>top</sub> =	2108.92	in <sup>3</sup>	y-bar =	32.1350
I <sub>x</sub> =	67770.26	n <sup>4</sup>	S <sub>bott.</sub> =	2108.92	in <sup>3</sup>	I <sub>x</sub> =	67770.26
C <sub>top</sub> =	32.1350	in	A =	93.0100	in <sup>2</sup>	C <sub>top</sub> =	32.1350
C <sub>bottom</sub> =	32.1350	in	r <sub>x</sub> =	26.9932	in	C <sub>bottom</sub> =	32.1350
J =	16.0790		Z =	2371.2426	in <sup>3</sup>	Z =	2371.2426



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Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	31.2600	8.0000	250.0800	0.6513	0.0000	0.0000	0.6513	
4	Top Cover Plate	14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333	
4	Bottom Cover Plate	14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333	
<b>Total</b>		<b>93.01</b>		<b>744.08</b>	<b>1250.06</b>		<b>196.28</b>	<b>1446.33</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	180.79	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	180.79	in <sup>3</sup>
I <sub>y</sub> =	1446.33	in <sup>4</sup>	S <sub>left</sub> =	180.79	in <sup>3</sup>	I <sub>y</sub> =	1446.33	in <sup>4</sup>	S <sub>left</sub> =	180.79	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	93.0100	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	93.0100	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.9434	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.9434	in

Non-composite Capacities*		
	AB	AI
M	6520.92 k-ft	6520.92 k-ft
V	598.32 k	598.32 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 57.9600$  in

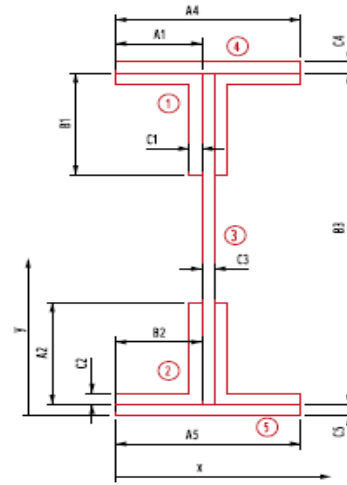
$d_o = 54.0000$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.8750$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.8750$  in  
 $A_5 = 16.0000$  in



**Girder 26-27 Section 2**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	58.4600	526.1400	0.4219	28.6050	7364.2142	7364.6361
	Vertical Leg	7.8750	55.4600	436.7475	18.0879	25.6050	5162.9762	5181.0641
2	Horizontal Leg	9.0000	1.2500	11.2500	0.4219	28.6050	7364.2142	7364.6361
	Vertical Leg	7.8750	4.2500	33.4688	18.0879	25.6050	5162.9762	5181.0641
3	Web Plate	28.9800	29.8550	865.1979	8112.8583	0.0000	0.0000	8112.8583
4	Cover Plate Top	14.0000	59.2725	829.8150	0.8932	29.4175	12115.4503	12116.3435
	Cover Plate Bottom	14.0000	0.4375	6.1250	0.8932	29.4175	12115.4503	12116.3435
<b>Total</b>		<b>90.73</b>		<b>2708.74</b>	<b>8151.66</b>		<b>49285.28</b>	<b>57436.95</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	29.8550	in	S <sub>top</sub> =	1923.86	in <sup>3</sup>	y-bar =	29.8550	in	S <sub>top</sub> =	1923.86	in <sup>3</sup>
I <sub>x</sub> =	57436.95	in <sup>4</sup>	S <sub>bottom</sub> =	1923.86	in <sup>3</sup>	I <sub>x</sub> =	57436.95	in <sup>4</sup>	S <sub>bottom</sub> =	1923.86	in <sup>3</sup>
C <sub>top</sub> =	29.8550	in	A =	90.7300	in <sup>2</sup>	C <sub>top</sub> =	29.8550	in	A =	90.7300	in <sup>2</sup>
C <sub>bottom</sub> =	29.8550	in	r <sub>x</sub> =	25.1606	in	C <sub>bottom</sub> =	29.8550	in	r <sub>x</sub> =	25.1606	in
J =	15.8890		Z =	2161.7790	in <sup>3</sup>	Z =	2161.7790	in <sup>3</sup>			



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	28.9800	8.0000	231.8400	0.6038	0.0000	0.0000	0.6038	
4	Top Cover Plate	14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333	
4	Bottom Cover Plate	14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333	
<b>Total</b>		<b>90.73</b>		<b>725.84</b>	<b>1250.01</b>		<b>196.28</b>	<b>1446.29</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	180.79	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	180.79	in <sup>3</sup>
I <sub>y</sub> =	1446.29	in <sup>4</sup>	S <sub>left</sub> =	180.79	in <sup>3</sup>	I <sub>y</sub> =	1446.29	in <sup>4</sup>	S <sub>left</sub> =	180.79	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	90.7300	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	90.7300	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.9926	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.9926	in

Non-composite Capacities*		
	AB	AI
M	5944.89 k-ft	5944.89 k-ft
V	554.68 k	554.68 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

**Top Angles:**

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

**Bottom Angles:**

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

**Web Plate:**

$C_3 = 0.5000$  in  
 $*B_3 = 53.4000$  in

$d_o = 54.0000$  in

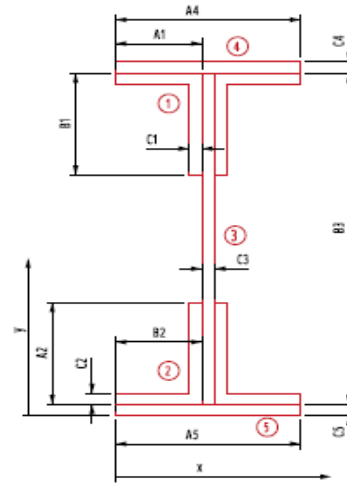
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

**Top Cover Plate:**

$C_4 = 0.8750$  in  
 $A_4 = 16.0000$  in

**Btm Cover Plate:**

$C_5 = 0.8750$  in  
 $A_5 = 16.0000$  in



**Girder 26-27 Section 3**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	53.9000	485.1000	0.4219	26.3250	6237.0506	6237.4725
	Vertical Leg	7.8750	50.9000	400.8375	18.0879	23.3250	4284.4380	4302.5259
2	Horizontal Leg	9.0000	1.2500	11.2500	0.4219	26.3250	6237.0506	6237.4725
	Vertical Leg	7.8750	4.2500	33.4688	18.0879	23.3250	4284.4380	4302.5259
3	Web Plate	26.7000	27.5750	736.2525	6344.7210	0.0000	0.0000	6344.7210
4	Cover Plate Top	14.0000	54.7125	765.9750	0.8932	27.1375	10310.2147	10311.1079
	Cover Plate Bottom	14.0000	0.4375	6.1250	0.8932	27.1375	10310.2147	10311.1079
<b>Total</b>		<b>88.45</b>		<b>2439.01</b>	<b>6383.53</b>		<b>41663.41</b>	<b>48046.93</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	27.5750	in	S <sub>top</sub> =	1742.41	in <sup>3</sup>	y-bar =	27.5750
I <sub>x</sub> =	48046.93	n <sup>4</sup>	S <sub>bott.</sub> =	1742.41	in <sup>3</sup>	I <sub>x</sub> =	48046.93
C <sub>top</sub> =	27.5750	in	A =	88.4500	in <sup>2</sup>	C <sub>top</sub> =	27.5750
C <sub>bottom</sub> =	27.5750	in	r <sub>x</sub> =	23.3069	in	C <sub>bottom</sub> =	27.5750
J =	15.6990		Z =	1957.5138	in <sup>3</sup>	Z =	1957.5138



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 Date 3/30/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	26.7000	8.0000	213.6000	0.5563	0.0000	0.0000	0.5563	
4	Top Cover Plate	14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333	
4	Bottom Cover Plate	14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333	
<b>Total</b>		<b>88.45</b>		<b>707.60</b>	<b>1249.96</b>		<b>196.28</b>	<b>1446.24</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	180.78	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	180.78	in <sup>3</sup>
I <sub>y</sub> =	1446.24	in <sup>4</sup>	S <sub>left</sub> =	180.78	in <sup>3</sup>	I <sub>y</sub> =	1446.24	in <sup>4</sup>	S <sub>left</sub> =	180.78	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	88.4500	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	88.4500	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.0436	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.0436	in

Non-composite Capacities*		
	AB	AI
M	5383.16 k-ft	5383.16 k-ft
V	511.04 k	511.04 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
------------------	-----------

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 50.4000$  in

$d_o = 48.0000$  in

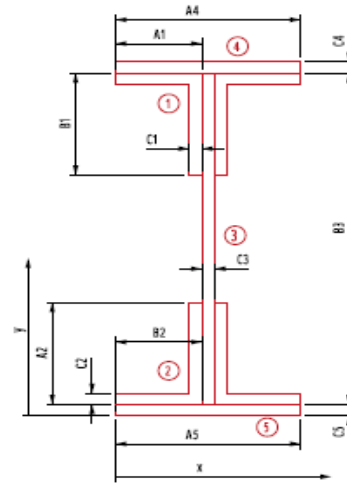
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 1.7500$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 1.7500$  in  
 $A_5 = 16.0000$  in



**Girder 26-27 Section 4**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	51.7750	465.9750	0.4219	24.8250	5546.5256	5546.9475
	Vertical Leg	7.8750	48.7750	384.1031	18.0879	21.8250	3751.1037	3769.1916
2	Horizontal Leg	9.0000	2.1250	19.1250	0.4219	24.8250	5546.5256	5546.9475
	Vertical Leg	7.8750	5.1250	40.3594	18.0879	21.8250	3751.1037	3769.1916
3	Web Plate	25.2000	26.9500	679.1400	5334.3360	0.0000	0.0000	5334.3360
4	Cover Plate Top	28.0000	53.0250	1484.7000	7.1458	26.0750	19037.3575	19044.5033
	Cover Plate Bottom	28.0000	0.8750	24.5000	7.1458	26.0750	19037.3575	19044.5033
<b>Total</b>		<b>114.95</b>		<b>3097.90</b>	<b>5385.65</b>		<b>56669.97</b>	<b>62055.62</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	26.9500 in	$S_{top} =$	2302.62 in <sup>3</sup>	y-bar =	26.9500 in	$S_{top} =$	2302.62 in <sup>3</sup>
$I_x =$	62055.62 in <sup>4</sup>	$S_{bott.} =$	2302.62 in <sup>3</sup>	$I_x =$	62055.62 in <sup>4</sup>	$S_{bott.} =$	2302.62 in <sup>3</sup>
$C_{top} =$	26.9500 in	A =	114.9500 in <sup>2</sup>	$C_{top} =$	26.9500 in	A =	114.9500 in <sup>2</sup>
$C_{bottom} =$	26.9500 in	$r_x =$	23.2346 in	$C_{bottom} =$	26.9500 in	$r_x =$	23.2346 in
J =	65.5948	Z =	2568.3138 in <sup>3</sup>	Z =	2568.3138		in <sup>3</sup>





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 Date 3/30/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
3	Web Plate	25.2000	8.0000	201.6000	0.5250	0.0000	0.0000	0.5250
4	Top Cover Plate	28.0000	8.0000	224.0000	1194.6667	0.0000	0.0000	1194.6667
4	Bottom Cover Plate	28.0000	8.0000	224.0000	1194.6667	0.0000	0.0000	1194.6667
<b>Total</b>		<b>114.95</b>		<b>919.60</b>	<b>2444.60</b>		<b>196.28</b>	<b>2640.87</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	330.11	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	330.11	in <sup>3</sup>
I <sub>y</sub> =	2640.87	in <sup>4</sup>	S <sub>left</sub> =	330.11	in <sup>3</sup>	I <sub>y</sub> =	2640.87	in <sup>4</sup>	S <sub>left</sub> =	330.11	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	114.9500	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	114.9500	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.7931	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.7931	in

Non-composite Capacities*		
	AB	AI
M	7062.86 k-ft	7062.86 k-ft
V	482.33 k	482.33 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 49.0800$  in

$d_o = 48.0000$  in

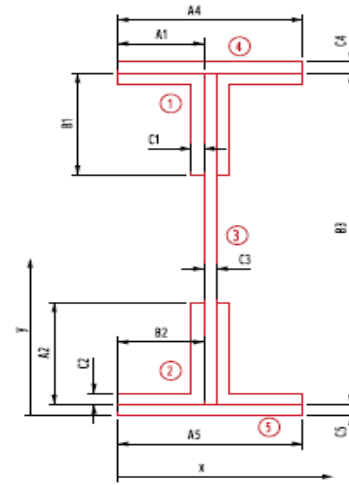
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 2.1250$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 2.1250$  in  
 $A_5 = 16.0000$  in



Girder 26-27 Section 5

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	50.8300	457.4700	0.4219	24.1650	5255.5250	5255.9469
	Vertical Leg	7.8750	47.8300	376.6613	18.0879	21.1650	3527.6631	3545.7510
2	Horizontal Leg	9.0000	2.5000	22.5000	0.4219	24.1650	5255.5250	5255.9469
	Vertical Leg	7.8750	5.5000	43.3125	18.0879	21.1650	3527.6631	3545.7510
3	Web Plate	24.5400	26.6650	654.3591	4926.0909	0.0000	0.0000	4926.0909
4	Cover Plate Top	34.0000	52.2675	1777.0950	12.7943	25.6025	22286.5922	22299.3865
	Cover Plate Bottom	34.0000	1.0625	36.1250	12.7943	25.6025	22286.5922	22299.3865
<b>Total</b>		<b>126.29</b>		<b>3367.52</b>	<b>4988.70</b>		<b>62139.56</b>	<b>67128.26</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	26.6650	in	S <sub>top</sub> =	2517.47	in <sup>3</sup>	y-bar =	26.6650	in	S <sub>top</sub> =	2517.47	in <sup>3</sup>
I <sub>x</sub> =	67128.26	n <sup>4</sup>	S <sub>bott.</sub> =	2517.47	in <sup>3</sup>	I <sub>x</sub> =	67128.26	in <sup>4</sup>	S <sub>bott.</sub> =	2517.47	in <sup>3</sup>
C <sub>top</sub> =	26.6650	in	A =	126.2900	in <sup>2</sup>	C <sub>top</sub> =	26.6650	in	A =	126.2900	in <sup>2</sup>
C <sub>bottom</sub> =	26.6650	in	r <sub>x</sub> =	23.0552	in	C <sub>bottom</sub> =	26.6650	in	r <sub>x</sub> =	23.0552	in
J =	110.7273		Z =	2810.3946	in <sup>3</sup>	Z =	2810.3946	in <sup>3</sup>			



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Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	24.5400	8.0000	196.3200	0.5113	0.0000	0.0000	0.5113	
4	Top Cover Plate	34.0000	8.0000	272.0000	1450.6667	0.0000	0.0000	1450.6667	
4	Bottom Cover Plate	34.0000	8.0000	272.0000	1450.6667	0.0000	0.0000	1450.6667	
<b>Total</b>		<b>126.29</b>		<b>1010.32</b>	<b>2956.58</b>		<b>196.28</b>	<b>3152.86</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	394.11	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	394.11	in <sup>3</sup>
I <sub>y</sub> =	3152.86	in <sup>4</sup>	S <sub>left</sub> =	394.11	in <sup>3</sup>	I <sub>y</sub> =	3152.86	in <sup>4</sup>	S <sub>left</sub> =	394.11	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	126.2900	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	126.2900	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.9965	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.9965	in

Non-composite Capacities*		
	AB	AI
M	7728.59 k-ft	7728.59 k-ft
V	469.70 k	469.70 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

**Top Angles:**

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

**Bottom Angles:**

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

**Web Plate:**

$C_3 = 0.5000$  in  
 $*B_3 = 50.1600$  in

$d_o = 48.0000$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

**Top Cover Plate:**

$C_4 = 1.7500$  in  
 $A_4 = 16.0000$  in

**Btm Cover Plate:**

$C_5 = 1.7500$  in  
 $A_5 = 16.0000$  in



Girder 26-27 Section 6

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	51.5350	463.8150	0.4219	24.7050	5493.0332	5493.4551
	Vertical Leg	7.8750	48.5350	382.2131	18.0879	21.7050	3709.9678	3728.0557
2	Horizontal Leg	9.0000	2.1250	19.1250	0.4219	24.7050	5493.0332	5493.4551
	Vertical Leg	7.8750	5.1250	40.3594	18.0879	21.7050	3709.9678	3728.0557
3	Web Plate	25.0800	26.8300	672.8964	5258.4935	0.0000	0.0000	5258.4935
4	Cover Plate Top	28.0000	52.7850	1477.9800	7.1458	25.9550	18862.5367	18869.6825
	Cover Plate Bottom	28.0000	0.8750	24.5000	7.1458	25.9550	18862.5367	18869.6825
<b>Total</b>		<b>114.83</b>		<b>3080.89</b>	<b>5309.80</b>		<b>56131.08</b>	<b>61440.88</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	26.8300 in	$S_{top} =$	2290.01 in <sup>3</sup>	y-bar =	26.8300 in	$S_{top} =$	2290.01 in <sup>3</sup>
$I_x =$	61440.88 in <sup>4</sup>	$S_{bott.} =$	2290.01 in <sup>3</sup>	$I_x =$	61440.88 in <sup>4</sup>	$S_{bott.} =$	2290.01 in <sup>3</sup>
$C_{top} =$	26.8300 in	A =	114.8300 in <sup>2</sup>	$C_{top} =$	26.8300 in	A =	114.8300 in <sup>2</sup>
$C_{bottom} =$	26.8300 in	$r_x =$	23.1314 in	$C_{bottom} =$	26.8300 in	$r_x =$	23.1314 in
J =	65.5848	Z =	2554.5270 in <sup>3</sup>	Z =	2554.5270 in <sup>3</sup>		



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 Date 3/30/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	25.0800	8.0000	200.6400	0.5225	0.0000	0.0000	0.5225	
4	Top Cover Plate	28.0000	8.0000	224.0000	1194.6667	0.0000	0.0000	1194.6667	
4	Bottom Cover Plate	28.0000	8.0000	224.0000	1194.6667	0.0000	0.0000	1194.6667	
<b>Total</b>		<b>114.83</b>		<b>918.64</b>	<b>2444.59</b>		<b>196.28</b>	<b>2640.87</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	330.11	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	330.11	in <sup>3</sup>
I <sub>y</sub> =	2640.87	in <sup>4</sup>	S <sub>left</sub> =	330.11	in <sup>3</sup>	I <sub>y</sub> =	2640.87	in <sup>4</sup>	S <sub>left</sub> =	330.11	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	114.8300	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	114.8300	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.7956	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.7956	in

Non-composite Capacities*		
	AB	AI
M	7024.95 k-ft	7024.95 k-ft
V	480.03 k	480.03 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

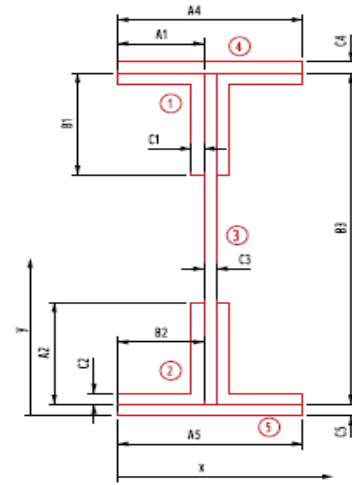
**Top Angles:**  $A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

**Bottom Angles:**  $B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

**Web Plate:**  $C_3 = 0.5000$  in  
 $*B_3 = 53.2800$  in  
 $d_o = 54.0000$  in  
 $d_o =$  stiffener spacing for shear check  
 Use "N/A" for no stiffeners

**Top Cover Plate:**  $C_4 = 0.8750$  in  
 $A_4 = 16.0000$  in

**Btm Cover Plate:**  $C_5 = 0.8750$  in  
 $A_5 = 16.0000$  in



**Girder 26-27 Section 7**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	53.7800	484.0200	0.4219	26.2650	6208.6520	6209.0739
	Vertical Leg	7.8750	50.7800	399.8925	18.0879	23.2650	4262.4243	4280.5122
2	Horizontal Leg	9.0000	1.2500	11.2500	0.4219	26.2650	6208.6520	6209.0739
	Vertical Leg	7.8750	4.2500	33.4688	18.0879	23.2650	4262.4243	4280.5122
3	Web Plate	26.6400	27.5150	732.9996	6302.0436	0.0000	0.0000	6302.0436
4	Cover Plate Top	14.0000	54.5925	764.2950	0.8932	27.0775	10264.6741	10265.5673
	Cover Plate Bottom	14.0000	0.4375	6.1250	0.8932	27.0775	10264.6741	10265.5673
<b>Total</b>		<b>88.39</b>		<b>2432.05</b>	<b>6340.85</b>		<b>41471.50</b>	<b>47812.35</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	27.5150	in	S <sub>top</sub> =	1737.68	in <sup>3</sup>	y-bar =	27.5150	in	S <sub>top</sub> =	1737.68	in <sup>3</sup>
I <sub>x</sub> =	47812.35	n <sup>4</sup>	S <sub>bott.</sub> =	1737.68	in <sup>3</sup>	I <sub>x</sub> =	47812.35	in <sup>4</sup>	S <sub>bott.</sub> =	1737.68	in <sup>3</sup>
C <sub>top</sub> =	27.5150	in	A =	88.3900	in <sup>2</sup>	C <sub>top</sub> =	27.5150	in	A =	88.3900	in <sup>2</sup>
C <sub>bottom</sub> =	27.5150	in	r <sub>x</sub> =	23.2578	in	C <sub>bottom</sub> =	27.5150	in	r <sub>x</sub> =	23.2578	in
J =	15.6940		Z =	1952.2086	in <sup>3</sup>	Z =	1952.2086		Z =	1952.2086	in <sup>3</sup>



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Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
3	Web Plate	26.6400	8.0000	213.1200	0.5550	0.0000	0.0000	0.5550
4	Top Cover Plate	14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333
4	Bottom Cover Plate	14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333
<b>Total</b>		<b>88.39</b>		<b>707.12</b>	<b>1249.96</b>		<b>196.28</b>	<b>1446.24</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	180.78	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	180.78	in <sup>3</sup>
I <sub>y</sub> =	1446.24	in <sup>4</sup>	S <sub>left</sub> =	180.78	in <sup>3</sup>	I <sub>y</sub> =	1446.24	in <sup>4</sup>	S <sub>left</sub> =	180.78	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	88.3900	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	88.3900	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.0450	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.0450	in

Non-composite Capacities*		
	AB	AI
M	5368.57 k-ft	5368.57 k-ft
V	509.89 k	509.89 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 57.9600$  in

$d_o = 59.6250$  in

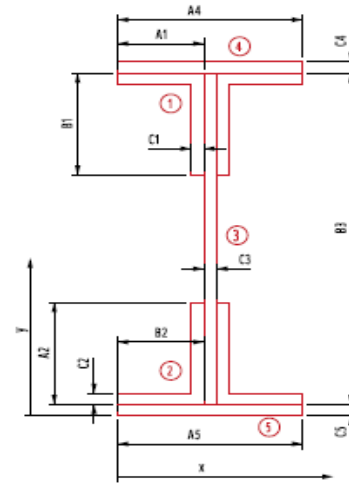
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.8750$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.8750$  in  
 $A_5 = 16.0000$  in



**Girder 26-27 Section 8**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	58.4600	526.1400	0.4219	28.6050	7364.2142	7364.6361
	Vertical Leg	7.8750	55.4600	436.7475	18.0879	25.6050	5162.9762	5181.0641
2	Horizontal Leg	9.0000	1.2500	11.2500	0.4219	28.6050	7364.2142	7364.6361
	Vertical Leg	7.8750	4.2500	33.4688	18.0879	25.6050	5162.9762	5181.0641
3	Web Plate	28.9800	29.8550	865.1979	8112.8583	0.0000	0.0000	8112.8583
4	Cover Plate Top	14.0000	59.2725	829.8150	0.8932	29.4175	12115.4503	12116.3435
	Cover Plate Bottom	14.0000	0.4375	6.1250	0.8932	29.4175	12115.4503	12116.3435
<b>Total</b>		<b>90.73</b>		<b>2708.74</b>	<b>8151.66</b>		<b>49285.28</b>	<b>57436.95</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	29.8550	in	S <sub>top</sub> =	1923.86	in <sup>3</sup>	y-bar =	29.8550	in	S <sub>top</sub> =	1923.86	in <sup>3</sup>
I <sub>x</sub> =	57436.95	in <sup>4</sup>	S <sub>bott.</sub> =	1923.86	in <sup>3</sup>	I <sub>x</sub> =	57436.95	in <sup>4</sup>	S <sub>bott.</sub> =	1923.86	in <sup>3</sup>
C <sub>top</sub> =	29.8550	in	A =	90.7300	in <sup>2</sup>	C <sub>top</sub> =	29.8550	in	A =	90.7300	in <sup>2</sup>
C <sub>bottom</sub> =	29.8550	in	r <sub>x</sub> =	25.1606	in	C <sub>bottom</sub> =	29.8550	in	r <sub>x</sub> =	25.1606	in
J =	15.8890		Z =	2161.7790	in <sup>3</sup>	Z =	2161.7790	in <sup>3</sup>			





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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	28.9800	8.0000	231.8400	0.6038	0.0000	0.0000	0.6038	
4	Top Cover Plate	14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333	
4	Bottom Cover Plate	14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333	
<b>Total</b>		<b>90.73</b>		<b>725.84</b>	<b>1250.01</b>		<b>196.28</b>	<b>1446.29</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	180.79	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	180.79	in <sup>3</sup>
I <sub>y</sub> =	1446.29	in <sup>4</sup>	S <sub>left</sub> =	180.79	in <sup>3</sup>	I <sub>y</sub> =	1446.29	in <sup>4</sup>	S <sub>left</sub> =	180.79	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	90.7300	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	90.7300	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.9926	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.9926	in

Non-composite Capacities*		
	AB	AI
M	5944.89 k-ft	5944.89 k-ft
V	554.68 k	554.68 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 62.5200$  in

$d_o = 64.6900$  in

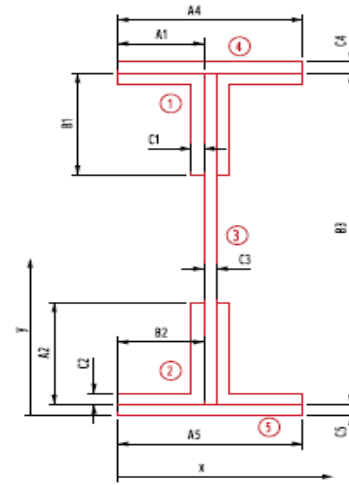
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.8750$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.8750$  in  
 $A_5 = 16.0000$  in



Girder 26-27 Section 9

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	63.0200	567.1800	0.4219	30.8850	8584.9490	8585.3709
	Vertical Leg	7.8750	60.0200	472.6575	18.0879	27.8850	6123.3891	6141.4770
2	Horizontal Leg	9.0000	1.2500	11.2500	0.4219	30.8850	8584.9490	8585.3709
	Vertical Leg	7.8750	4.2500	33.4688	18.0879	27.8850	6123.3891	6141.4770
3	Web Plate	31.2600	32.1350	1004.5401	10182.2948	0.0000	0.0000	10182.2948
4	Cover Plate Top	14.0000	63.8325	893.6550	0.8932	31.6975	14066.2411	14067.1343
	Cover Plate Bottom	14.0000	0.4375	6.1250	0.8932	31.6975	14066.2411	14067.1343
<b>Total</b>		<b>93.01</b>		<b>2988.88</b>	<b>10221.10</b>		<b>57549.16</b>	<b>67770.26</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	32.1350	in	S <sub>top</sub> =	2108.92	in <sup>3</sup>	y-bar =	32.1350
I <sub>x</sub> =	67770.26	n <sup>4</sup>	S <sub>bott.</sub> =	2108.92	in <sup>3</sup>	I <sub>x</sub> =	67770.26
C <sub>top</sub> =	32.1350	in	A =	93.0100	in <sup>2</sup>	C <sub>top</sub> =	32.1350
C <sub>bottom</sub> =	32.1350	in	r <sub>x</sub> =	26.9932	in	C <sub>bottom</sub> =	32.1350
J =	16.0790		Z =	2371.2426	in <sup>3</sup>	Z =	2371.2426



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Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	31.2600	8.0000	250.0800	0.6513	0.0000	0.0000	0.6513	
4	Top Cover Plate	14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333	
4	Bottom Cover Plate	14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333	
<b>Total</b>		<b>93.01</b>		<b>744.08</b>	<b>1250.06</b>		<b>196.28</b>	<b>1446.33</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	180.79	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	180.79	in <sup>3</sup>
I <sub>y</sub> =	1446.33	in <sup>4</sup>	S <sub>left</sub> =	180.79	in <sup>3</sup>	I <sub>y</sub> =	1446.33	in <sup>4</sup>	S <sub>left</sub> =	180.79	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	93.0100	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	93.0100	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.9434	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.9434	in

Non-composite Capacities*		
	AB	AI
M	6520.92 k-ft	6520.92 k-ft
V	598.32 k	598.32 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

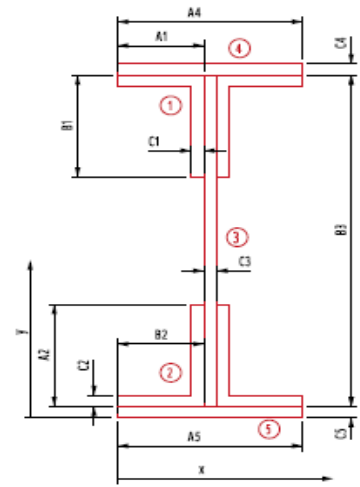
**Top Angles:**  $A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

**Bottom Angles:**  $B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

**Web Plate:**  $C_3 = 0.5000$  in  
 $*B_3 = 59.7600$  in  
 $d_o = 65.2500$  in  
 $d_o =$  stiffener spacing for shear check  
 Use "N/A" for no stiffeners

**Top Cover Plate:**  $C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

**Btm Cover Plate:**  $C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



**Girder 27-28 Section 1**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	59.8850	538.9650	0.4219	29.5050	7834.9052	7835.3271
	Vertical Leg	7.8750	56.8850	447.9694	18.0879	26.5050	5532.3058	5550.3937
2	Horizontal Leg	9.0000	0.8750	7.8750	0.4219	29.5050	7834.9052	7835.3271
	Vertical Leg	7.8750	3.8750	30.5156	18.0879	26.5050	5532.3058	5550.3937
3	Web Plate	29.8800	30.3800	907.7544	8892.4314	0.0000	0.0000	8892.4314
4	Cover Plate Top	8.0000	60.5100	484.0800	0.1667	30.1300	7262.5352	7262.7019
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	30.1300	7262.5352	7262.7019
<b>Total</b>		<b>79.63</b>		<b>2419.16</b>	<b>8929.78</b>		<b>41259.49</b>	<b>50189.28</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	30.3800 in	S <sub>top</sub> =	1652.05 in <sup>3</sup>	y-bar =	30.3800 in	S <sub>top</sub> =	1652.05 in <sup>3</sup>
I <sub>x</sub> =	50189.28 in <sup>4</sup>	S <sub>bott.</sub> =	1652.05 in <sup>3</sup>	I <sub>x</sub> =	50189.28 in <sup>4</sup>	S <sub>bott.</sub> =	1652.05 in <sup>3</sup>
C <sub>top</sub> =	30.3800 in	A =	79.6300 in <sup>2</sup>	C <sub>top</sub> =	30.3800 in	A =	79.6300 in <sup>2</sup>
C <sub>bottom</sub> =	30.3800 in	r <sub>x</sub> =	25.1054 in	C <sub>bottom</sub> =	30.3800 in	r <sub>x</sub> =	25.1054 in
J =	10.1515	Z =	1877.0310 in <sup>3</sup>			Z =	1877.0310 in <sup>3</sup>



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 Date 3/30/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	29.8800	8.0000	239.0400	0.6225	0.0000	0.0000	0.6225	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>79.63</b>		<b>637.04</b>	<b>738.03</b>		<b>196.28</b>	<b>934.30</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	116.79	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	116.79	in <sup>3</sup>
I <sub>y</sub> =	934.30	in <sup>4</sup>	S <sub>left</sub> =	116.79	in <sup>3</sup>	I <sub>y</sub> =	934.30	in <sup>4</sup>	S <sub>left</sub> =	116.79	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	79.6300	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	79.6300	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.4254	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.4254	in

Non-composite Capacities*		
	AB	AI
M	5161.84 k-ft	5161.84 k-ft
V	571.90 k	571.90 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
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AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 52.9200$  in

$d_o = 48.0000$  in

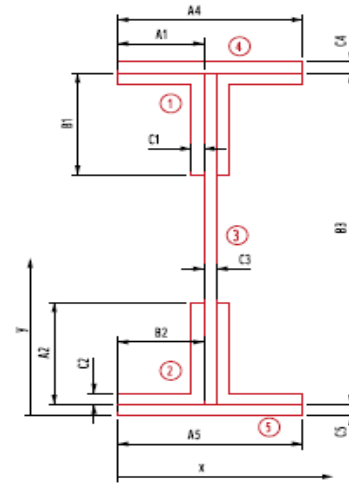
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



**Girder 27-28 Section 2**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	53.0450	477.4050	0.4219	26.0850	6123.8450	6124.2669
	Vertical Leg	7.8750	50.0450	394.1044	18.0879	23.0850	4196.7231	4214.8110
2	Horizontal Leg	9.0000	0.8750	7.8750	0.4219	26.0850	6123.8450	6124.2669
	Vertical Leg	7.8750	3.8750	30.5156	18.0879	23.0850	4196.7231	4214.8110
3	Web Plate	26.4600	26.9600	713.3616	6175.1607	0.0000	0.0000	6175.1607
4	Cover Plate Top	8.0000	53.6700	429.3600	0.1667	26.7100	5707.3928	5707.5595
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	26.7100	5707.3928	5707.5595
<b>Total</b>		<b>76.21</b>		<b>2054.62</b>	<b>6212.51</b>		<b>32055.92</b>	<b>38268.44</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	26.9600	in	S <sub>top</sub> =	1419.45	in <sup>3</sup>	y-bar =	26.9600	in	S <sub>top</sub> =	1419.45	in <sup>3</sup>
I <sub>x</sub> =	38268.44	in <sup>4</sup>	S <sub>bottom</sub> =	1419.45	in <sup>3</sup>	I <sub>x</sub> =	38268.44	in <sup>4</sup>	S <sub>bottom</sub> =	1419.45	in <sup>3</sup>
C <sub>top</sub> =	26.9600	in	A =	76.2100	in <sup>2</sup>	C <sub>top</sub> =	26.9600	in	A =	76.2100	in <sup>2</sup>
C <sub>bottom</sub> =	26.9600	in	r <sub>x</sub> =	22.4086	in	C <sub>bottom</sub> =	26.9600	in	r <sub>x</sub> =	22.4086	in
J =	9.8665		Z =	1610.5446	in <sup>3</sup>	Z =	1610.5446	in <sup>3</sup>			



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	26.4600	8.0000	211.6800	0.5513	0.0000	0.0000	0.5513	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>76.21</b>		<b>609.68</b>	<b>737.96</b>		<b>196.28</b>	<b>934.23</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	116.78	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	116.78	in <sup>3</sup>
I <sub>y</sub> =	934.23	in <sup>4</sup>	S <sub>left</sub> =	116.78	in <sup>3</sup>	I <sub>y</sub> =	934.23	in <sup>4</sup>	S <sub>left</sub> =	116.78	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	76.2100	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	76.2100	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5012	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5012	in

Non-composite Capacities*		
	AB	AI
M	4429.00 k-ft	4429.00 k-ft
V	506.44 k	506.44 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
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AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

**Top Angles:**

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

**Bottom Angles:**

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

**Web Plate:**

$C_3 = 0.5000$  in  
 $*B_3 = 49.8000$  in

$d_o = 48.0000$  in

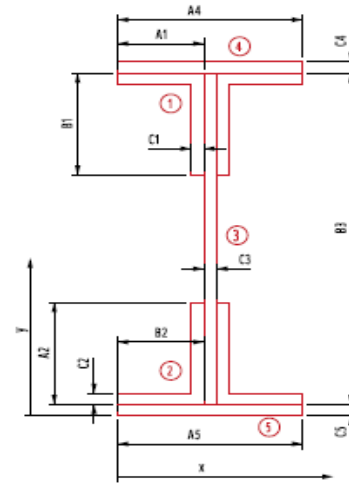
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

**Top Cover Plate:**

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

**Btm Cover Plate:**

$C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



**Girder 27-28 Section 3**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	49.9250	449.3250	0.4219	24.5250	5413.2806	5413.7025
	Vertical Leg	7.8750	46.9250	369.5344	18.0879	21.5250	3648.6893	3666.7772
2	Horizontal Leg	9.0000	0.8750	7.8750	0.4219	24.5250	5413.2806	5413.7025
	Vertical Leg	7.8750	3.8750	30.5156	18.0879	21.5250	3648.6893	3666.7772
3	Web Plate	24.9000	25.4000	632.4600	5146.0830	0.0000	0.0000	5146.0830
4	Cover Plate Top	8.0000	50.5500	404.4000	0.1667	25.1500	5060.1800	5060.3467
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	25.1500	5060.1800	5060.3467
<b>Total</b>		<b>74.65</b>		<b>1896.11</b>	<b>5183.44</b>		<b>28244.30</b>	<b>33427.74</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	25.4000 in	$S_{top} =$	1316.05 in <sup>3</sup>	y-bar =	25.4000 in	$S_{top} =$	1316.05 in <sup>3</sup>
$I_x =$	33427.74 in <sup>4</sup>	$S_{bott.} =$	1316.05 in <sup>3</sup>	$I_x =$	33427.74 in <sup>4</sup>	$S_{bott.} =$	1316.05 in <sup>3</sup>
$C_{top} =$	25.4000 in	A =	74.6500 in <sup>2</sup>	$C_{top} =$	25.4000 in	A =	74.6500 in <sup>2</sup>
$C_{bottom} =$	25.4000 in	$r_x =$	21.1611 in	$C_{bottom} =$	25.4000 in	$r_x =$	21.1611 in
J =	9.7365	Z =	1492.8738 in <sup>3</sup>	Z =	1492.8738		in <sup>3</sup>





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Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	24.9000	8.0000	199.2000	0.5188	0.0000	0.0000	0.5188	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>74.65</b>		<b>597.20</b>	<b>737.92</b>		<b>196.28</b>	<b>934.20</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	116.78	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	116.78	in <sup>3</sup>
I <sub>y</sub> =	934.20	in <sup>4</sup>	S <sub>left</sub> =	116.78	in <sup>3</sup>	I <sub>y</sub> =	934.20	in <sup>4</sup>	S <sub>left</sub> =	116.78	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	74.6500	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	74.6500	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5376	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5376	in

Non-composite Capacities*		
	AB	AI
M	4105.40 k-ft	4105.40 k-ft
V	476.59 k	476.59 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 52.9200$  in

$d_o = 48.0000$  in

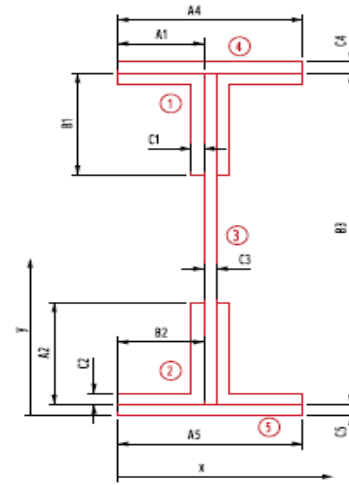
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



Girder 27-28 Section 4

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	53.0450	477.4050	0.4219	26.0850	6123.8450	6124.2669
	Vertical Leg	7.8750	50.0450	394.1044	18.0879	23.0850	4196.7231	4214.8110
2	Horizontal Leg	9.0000	0.8750	7.8750	0.4219	26.0850	6123.8450	6124.2669
	Vertical Leg	7.8750	3.8750	30.5156	18.0879	23.0850	4196.7231	4214.8110
3	Web Plate	26.4600	26.9600	713.3616	6175.1607	0.0000	0.0000	6175.1607
4	Cover Plate Top	8.0000	53.6700	429.3600	0.1667	26.7100	5707.3928	5707.5595
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	26.7100	5707.3928	5707.5595
<b>Total</b>		<b>76.21</b>		<b>2054.62</b>	<b>6212.51</b>		<b>32055.92</b>	<b>38268.44</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	26.9600 in	$S_{top} =$	1419.45 in <sup>3</sup>	y-bar =	26.9600 in	$S_{top} =$	1419.45 in <sup>3</sup>
$I_x =$	38268.44 in <sup>4</sup>	$S_{bott.} =$	1419.45 in <sup>3</sup>	$I_x =$	38268.44 in <sup>4</sup>	$S_{bott.} =$	1419.45 in <sup>3</sup>
$C_{top} =$	26.9600 in	A =	76.2100 in <sup>2</sup>	$C_{top} =$	26.9600 in	A =	76.2100 in <sup>2</sup>
$C_{bottom} =$	26.9600 in	$r_x =$	22.4086 in	$C_{bottom} =$	26.9600 in	$r_x =$	22.4086 in
J =	9.8665	Z =	1610.5446 in <sup>3</sup>	Z =	1610.5446		in <sup>3</sup>



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	26.4600	8.0000	211.6800	0.5513	0.0000	0.0000	0.5513	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>76.21</b>		<b>609.68</b>	<b>737.96</b>		<b>196.28</b>	<b>934.23</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	116.78	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	116.78	in <sup>3</sup>
I <sub>y</sub> =	934.23	in <sup>4</sup>	S <sub>left</sub> =	116.78	in <sup>3</sup>	I <sub>y</sub> =	934.23	in <sup>4</sup>	S <sub>left</sub> =	116.78	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	76.2100	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	76.2100	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5012	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5012	in

Non-composite Capacities*		
	AB	AI
M	4429.00 k-ft	4429.00 k-ft
V	506.44 k	506.44 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 59.6400$  in

$d_o = 64.1250$  in

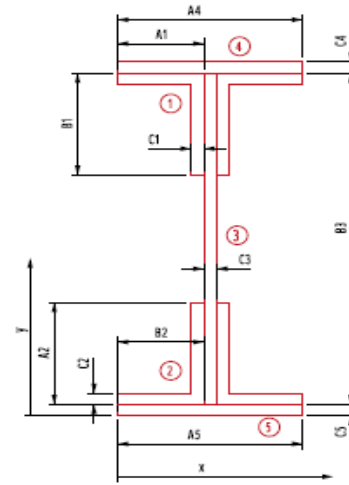
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



**Girder 27-28 Section 5**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	59.7650	537.8850	0.4219	29.4450	7803.0722	7803.4941
	Vertical Leg	7.8750	56.7650	447.0244	18.0879	26.4450	5507.2869	5525.3748
2	Horizontal Leg	9.0000	0.8750	7.8750	0.4219	29.4450	7803.0722	7803.4941
	Vertical Leg	7.8750	3.8750	30.5156	18.0879	26.4450	5507.2869	5525.3748
3	Web Plate	29.8200	30.3200	904.1424	8838.9701	0.0000	0.0000	8838.9701
4	Cover Plate Top	8.0000	60.3900	483.1200	0.1667	30.0700	7233.6392	7233.8059
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	30.0700	7233.6392	7233.8059
<b>Total</b>		<b>79.57</b>		<b>2412.56</b>	<b>8876.32</b>		<b>41088.00</b>	<b>49964.32</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	30.3200 in	$S_{top} =$	1647.90 in <sup>3</sup>	y-bar =	30.3200 in	$S_{top} =$	1647.90 in <sup>3</sup>
$I_x =$	49964.32 in <sup>4</sup>	$S_{bott.} =$	1647.90 in <sup>3</sup>	$I_x =$	49964.32 in <sup>4</sup>	$S_{bott.} =$	1647.90 in <sup>3</sup>
$C_{top} =$	30.3200 in	A =	79.5700 in <sup>2</sup>	$C_{top} =$	30.3200 in	A =	79.5700 in <sup>2</sup>
$C_{bottom} =$	30.3200 in	$r_x =$	25.0585 in	$C_{bottom} =$	30.3200 in	$r_x =$	25.0585 in
J =	10.1465	Z =	1872.2550 in <sup>3</sup>			Z =	1872.2550 in <sup>3</sup>



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	29.8200	8.0000	238.5600	0.6213	0.0000	0.0000	0.6213	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>79.57</b>		<b>636.56</b>	<b>738.03</b>		<b>196.28</b>	<b>934.30</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	116.79	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	116.79	in <sup>3</sup>
I <sub>y</sub> =	934.30	in <sup>4</sup>	S <sub>left</sub> =	116.79	in <sup>3</sup>	I <sub>y</sub> =	934.30	in <sup>4</sup>	S <sub>left</sub> =	116.79	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	79.5700	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	79.5700	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.4266	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.4266	in

Non-composite Capacities*		
	AB	AI
M	5148.70 k-ft	5148.70 k-ft
V	570.75 k	570.75 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
------------------	-----------

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 62.5200$  in

$d_o = 65.4400$  in

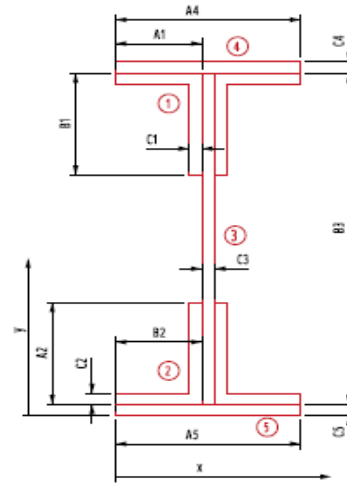
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.8750$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.8750$  in  
 $A_5 = 16.0000$  in



**Girder 28-29 Section 1**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	63.0200	567.1800	0.4219	30.8850	8584.9490	8585.3709
	Vertical Leg	7.8750	60.0200	472.6575	18.0879	27.8850	6123.3891	6141.4770
2	Horizontal Leg	9.0000	1.2500	11.2500	0.4219	30.8850	8584.9490	8585.3709
	Vertical Leg	7.8750	4.2500	33.4688	18.0879	27.8850	6123.3891	6141.4770
3	Web Plate	31.2600	32.1350	1004.5401	10182.2948	0.0000	0.0000	10182.2948
4	Cover Plate Top	14.0000	63.8325	893.6550	0.8932	31.6975	14066.2411	14067.1343
	Cover Plate Bottom	14.0000	0.4375	6.1250	0.8932	31.6975	14066.2411	14067.1343
<b>Total</b>		<b>93.01</b>		<b>2988.88</b>	<b>10221.10</b>		<b>57549.16</b>	<b>67770.26</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	32.1350	in	S <sub>top</sub> = 2108.92 in <sup>3</sup>	y-bar =	32.1350	in	S <sub>top</sub> = 2108.92 in <sup>3</sup>
I <sub>x</sub> =	67770.26	in <sup>4</sup>	S <sub>bottom</sub> = 2108.92 in <sup>3</sup>	I <sub>x</sub> =	67770.26	in <sup>4</sup>	S <sub>bottom</sub> = 2108.92 in <sup>3</sup>
C <sub>top</sub> =	32.1350	in	A = 93.0100 in <sup>2</sup>	C <sub>top</sub> =	32.1350	in	A = 93.0100 in <sup>2</sup>
C <sub>bottom</sub> =	32.1350	in	r <sub>x</sub> = 26.9932 in	C <sub>bottom</sub> =	32.1350	in	r <sub>x</sub> = 26.9932 in
J =	16.0790		Z = 2371.2426 in <sup>3</sup>				Z = 2371.2426 in <sup>3</sup>



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Date 3/22/2012  
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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	31.2600	8.0000	250.0800	0.6513	0.0000	0.0000	0.6513	
4	Top Cover Plate	14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333	
4	Bottom Cover Plate	14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333	
<b>Total</b>		<b>93.01</b>		<b>744.08</b>	<b>1250.06</b>		<b>196.28</b>	<b>1446.33</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	180.79	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	180.79	in <sup>3</sup>
I <sub>y</sub> =	1446.33	in <sup>4</sup>	S <sub>left</sub> =	180.79	in <sup>3</sup>	I <sub>y</sub> =	1446.33	in <sup>4</sup>	S <sub>left</sub> =	180.79	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	93.0100	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	93.0100	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.9434	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.9434	in

Non-composite Capacities*		
	AB	AI
M	6520.92 k-ft	6520.92 k-ft
V	598.32 k	598.32 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
------------------	-----------

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 57.9600$  in

$d_o = 60.0000$  in

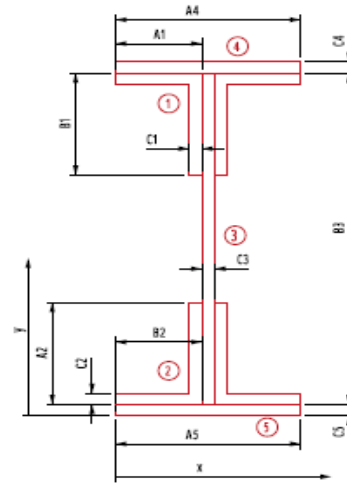
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.8750$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.8750$  in  
 $A_5 = 16.0000$  in



Girder 28-29 Section 2

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg		9.0000	58.4600	526.1400	0.4219	28.6050	7364.2142	7364.6361
	Vertical Leg		7.8750	55.4600	436.7475	18.0879	25.6050	5162.9762	5181.0641
2	Horizontal Leg		9.0000	1.2500	11.2500	0.4219	28.6050	7364.2142	7364.6361
	Vertical Leg		7.8750	4.2500	33.4688	18.0879	25.6050	5162.9762	5181.0641
3	Web Plate		28.9800	29.8550	865.1979	8112.8583	0.0000	0.0000	8112.8583
4	Cover Plate Top		14.0000	59.2725	829.8150	0.8932	29.4175	12115.4503	12116.3435
	Cover Plate Bottom		14.0000	0.4375	6.1250	0.8932	29.4175	12115.4503	12116.3435
<b>Total</b>			<b>90.73</b>		<b>2708.74</b>	<b>8151.66</b>		<b>49285.28</b>	<b>57436.95</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	29.8550	in	S <sub>top</sub> =	1923.86	in <sup>3</sup>	y-bar =	29.8550	in	S <sub>top</sub> =	1923.86	in <sup>3</sup>
I <sub>x</sub> =	57436.95	in <sup>4</sup>	S <sub>bott.</sub> =	1923.86	in <sup>3</sup>	I <sub>x</sub> =	57436.95	in <sup>4</sup>	S <sub>bott.</sub> =	1923.86	in <sup>3</sup>
C <sub>top</sub> =	29.8550	in	A =	90.7300	in <sup>2</sup>	C <sub>top</sub> =	29.8550	in	A =	90.7300	in <sup>2</sup>
C <sub>bottom</sub> =	29.8550	in	r <sub>x</sub> =	25.1606	in	C <sub>bottom</sub> =	29.8550	in	r <sub>x</sub> =	25.1606	in
J =	15.8890		Z =	2161.7790	in <sup>3</sup>				Z =	2161.7790	in <sup>3</sup>





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 Date 3/30/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	28.9800	8.0000	231.8400	0.6038	0.0000	0.0000	0.6038	
4	Top Cover Plate	14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333	
4	Bottom Cover Plate	14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333	
<b>Total</b>		<b>90.73</b>		<b>725.84</b>	<b>1250.01</b>		<b>196.28</b>	<b>1446.29</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	180.79	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	180.79	in <sup>3</sup>
I <sub>y</sub> =	1446.29	in <sup>4</sup>	S <sub>left</sub> =	180.79	in <sup>3</sup>	I <sub>y</sub> =	1446.29	in <sup>4</sup>	S <sub>left</sub> =	180.79	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	90.7300	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	90.7300	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.9926	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.9926	in

Non-composite Capacities*		
	AB	AI
M	5944.89 k-ft	5944.89 k-ft
V	554.68 k	554.68 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
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AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

**Top Angles:**

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

**Bottom Angles:**

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

**Web Plate:**

$C_3 = 0.5000$  in  
 $*B_3 = 53.2800$  in

$d_o = 54.0000$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

**Top Cover Plate:**

$C_4 = 0.8750$  in  
 $A_4 = 16.0000$  in

**Btm Cover Plate:**

$C_5 = 0.8750$  in  
 $A_5 = 16.0000$  in



**Girder 28-29 Section 3**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	53.7800	484.0200	0.4219	26.2650	6208.6520	6209.0739
	Vertical Leg	7.8750	50.7800	399.8925	18.0879	23.2650	4262.4243	4280.5122
2	Horizontal Leg	9.0000	1.2500	11.2500	0.4219	26.2650	6208.6520	6209.0739
	Vertical Leg	7.8750	4.2500	33.4688	18.0879	23.2650	4262.4243	4280.5122
3	Web Plate	26.6400	27.5150	732.9996	6302.0436	0.0000	0.0000	6302.0436
4	Cover Plate Top	14.0000	54.5925	764.2950	0.8932	27.0775	10264.6741	10265.5673
	Cover Plate Bottom	14.0000	0.4375	6.1250	0.8932	27.0775	10264.6741	10265.5673
<b>Total</b>		<b>88.39</b>		<b>2432.05</b>	<b>6340.85</b>		<b>41471.50</b>	<b>47812.35</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	27.5150	in	S <sub>top</sub> =	1737.68	in <sup>3</sup>	y-bar =	27.5150	in	S <sub>top</sub> =	1737.68	in <sup>3</sup>
I <sub>x</sub> =	47812.35	n <sup>4</sup>	S <sub>bott.</sub> =	1737.68	in <sup>3</sup>	I <sub>x</sub> =	47812.35	in <sup>4</sup>	S <sub>bott.</sub> =	1737.68	in <sup>3</sup>
C <sub>top</sub> =	27.5150	in	A =	88.3900	in <sup>2</sup>	C <sub>top</sub> =	27.5150	in	A =	88.3900	in <sup>2</sup>
C <sub>bottom</sub> =	27.5150	in	r <sub>x</sub> =	23.2578	in	C <sub>bottom</sub> =	27.5150	in	r <sub>x</sub> =	23.2578	in
J =	15.6940		Z =	1952.2086	in <sup>3</sup>	Z =	1952.2086	in <sup>3</sup>			



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	26.6400	8.0000	213.1200	0.5550	0.0000	0.0000	0.5550	
4	Top Cover Plate	14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333	
4	Bottom Cover Plate	14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333	
<b>Total</b>		<b>88.39</b>		<b>707.12</b>	<b>1249.96</b>		<b>196.28</b>	<b>1446.24</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	180.78	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	180.78	in <sup>3</sup>
I <sub>y</sub> =	1446.24	in <sup>4</sup>	S <sub>left</sub> =	180.78	in <sup>3</sup>	I <sub>y</sub> =	1446.24	in <sup>4</sup>	S <sub>left</sub> =	180.78	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	88.3900	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	88.3900	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.0450	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.0450	in

Non-composite Capacities*		
	AB	AI
M	5368.57 k-ft	5368.57 k-ft
V	509.89 k	509.89 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 50.1600$  in

$d_o = 48.0000$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 1.7500$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 1.7500$  in  
 $A_5 = 16.0000$  in



**Girder 28-29 Section 4**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	51.5350	463.8150	0.4219	24.7050	5493.0332	5493.4551
	Vertical Leg	7.8750	48.5350	382.2131	18.0879	21.7050	3709.9678	3728.0557
2	Horizontal Leg	9.0000	2.1250	19.1250	0.4219	24.7050	5493.0332	5493.4551
	Vertical Leg	7.8750	5.1250	40.3594	18.0879	21.7050	3709.9678	3728.0557
3	Web Plate	25.0800	26.8300	672.8964	5258.4935	0.0000	0.0000	5258.4935
4	Cover Plate Top	28.0000	52.7850	1477.9800	7.1458	25.9550	18862.5367	18869.6825
	Cover Plate Bottom	28.0000	0.8750	24.5000	7.1458	25.9550	18862.5367	18869.6825
<b>Total</b>		<b>114.83</b>		<b>3080.89</b>	<b>5309.80</b>		<b>56131.08</b>	<b>61440.88</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	26.8300	in	S <sub>top</sub> =	2290.01	in <sup>3</sup>	y-bar =	26.8300	in	S <sub>top</sub> =	2290.01	in <sup>3</sup>
I <sub>x</sub> =	61440.88	n <sup>4</sup>	S <sub>bott.</sub> =	2290.01	in <sup>3</sup>	I <sub>x</sub> =	61440.88	in <sup>4</sup>	S <sub>bott.</sub> =	2290.01	in <sup>3</sup>
C <sub>top</sub> =	26.8300	in	A =	114.8300	in <sup>2</sup>	C <sub>top</sub> =	26.8300	in	A =	114.8300	in <sup>2</sup>
C <sub>bottom</sub> =	26.8300	in	r <sub>x</sub> =	23.1314	in	C <sub>bottom</sub> =	26.8300	in	r <sub>x</sub> =	23.1314	in
J =	65.5848		Z =	2554.5270	in <sup>3</sup>	Z =	2554.5270	in <sup>3</sup>			



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	25.0800	8.0000	200.6400	0.5225	0.0000	0.0000	0.5225	
4	Top Cover Plate	28.0000	8.0000	224.0000	1194.6667	0.0000	0.0000	1194.6667	
4	Bottom Cover Plate	28.0000	8.0000	224.0000	1194.6667	0.0000	0.0000	1194.6667	
<b>Total</b>		<b>114.83</b>		<b>918.64</b>	<b>2444.59</b>		<b>196.28</b>	<b>2640.87</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	330.11	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	330.11	in <sup>3</sup>
I <sub>y</sub> =	2640.87	in <sup>4</sup>	S <sub>left</sub> =	330.11	in <sup>3</sup>	I <sub>y</sub> =	2640.87	in <sup>4</sup>	S <sub>left</sub> =	330.11	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	114.8300	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	114.8300	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.7956	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.7956	in

Non-composite Capacities*		
	AB	AI
M	7024.95 k-ft	7024.95 k-ft
V	480.03 k	480.03 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 49.0800$  in

$d_o = 48.0000$  in

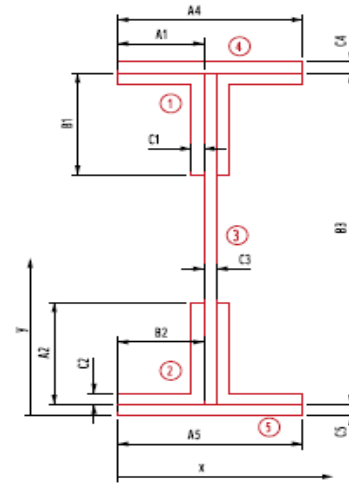
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 2.1250$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 2.1250$  in  
 $A_5 = 16.0000$  in



**Girder 28-29 Section 5**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	50.8300	457.4700	0.4219	24.1650	5255.5250	5255.9469
	Vertical Leg	7.8750	47.8300	376.6613	18.0879	21.1650	3527.6631	3545.7510
2	Horizontal Leg	9.0000	2.5000	22.5000	0.4219	24.1650	5255.5250	5255.9469
	Vertical Leg	7.8750	5.5000	43.3125	18.0879	21.1650	3527.6631	3545.7510
3	Web Plate	24.5400	26.6650	654.3591	4926.0909	0.0000	0.0000	4926.0909
4	Cover Plate Top	34.0000	52.2675	1777.0950	12.7943	25.6025	22286.5922	22299.3865
	Cover Plate Bottom	34.0000	1.0625	36.1250	12.7943	25.6025	22286.5922	22299.3865
<b>Total</b>		<b>126.29</b>		<b>3367.52</b>	<b>4988.70</b>		<b>62139.56</b>	<b>67128.26</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	26.6650 in	S <sub>top</sub> =	2517.47 in <sup>3</sup>	y-bar =	26.6650 in	S <sub>top</sub> =	2517.47 in <sup>3</sup>
I <sub>x</sub> =	67128.26 in <sup>4</sup>	S <sub>bott.</sub> =	2517.47 in <sup>3</sup>	I <sub>x</sub> =	67128.26 in <sup>4</sup>	S <sub>bott.</sub> =	2517.47 in <sup>3</sup>
C <sub>top</sub> =	26.6650 in	A =	126.2900 in <sup>2</sup>	C <sub>top</sub> =	26.6650 in	A =	126.2900 in <sup>2</sup>
C <sub>bottom</sub> =	26.6650 in	r <sub>x</sub> =	23.0552 in	C <sub>bottom</sub> =	26.6650 in	r <sub>x</sub> =	23.0552 in
J =	110.7273	Z =	2810.3946 in <sup>3</sup>	Z =	2810.3946 in <sup>3</sup>		



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	24.5400	8.0000	196.3200	0.5113	0.0000	0.0000	0.5113	
4	Top Cover Plate	34.0000	8.0000	272.0000	1450.6667	0.0000	0.0000	1450.6667	
4	Bottom Cover Plate	34.0000	8.0000	272.0000	1450.6667	0.0000	0.0000	1450.6667	
<b>Total</b>		<b>126.29</b>		<b>1010.32</b>	<b>2956.58</b>		<b>196.28</b>	<b>3152.86</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	394.11	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	394.11	in <sup>3</sup>
I <sub>y</sub> =	3152.86	in <sup>4</sup>	S <sub>left</sub> =	394.11	in <sup>3</sup>	I <sub>y</sub> =	3152.86	in <sup>4</sup>	S <sub>left</sub> =	394.11	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	126.2900	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	126.2900	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.9965	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.9965	in

Non-composite Capacities*		
	AB	AI
M	7728.59 k-ft	7728.59 k-ft
V	469.70 k	469.70 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 50.4000$  in

$d_o = 48.0000$  in

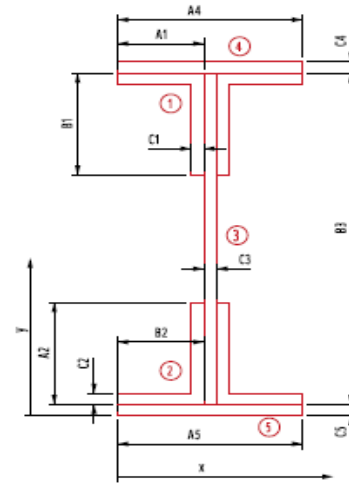
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 1.7500$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 1.7500$  in  
 $A_5 = 16.0000$  in



**Girder 28-29 Section 6**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	51.7750	465.9750	0.4219	24.8250	5546.5256	5546.9475
	Vertical Leg	7.8750	48.7750	384.1031	18.0879	21.8250	3751.1037	3769.1916
2	Horizontal Leg	9.0000	2.1250	19.1250	0.4219	24.8250	5546.5256	5546.9475
	Vertical Leg	7.8750	5.1250	40.3594	18.0879	21.8250	3751.1037	3769.1916
3	Web Plate	25.2000	26.9500	679.1400	5334.3360	0.0000	0.0000	5334.3360
4	Cover Plate Top	28.0000	53.0250	1484.7000	7.1458	26.0750	19037.3575	19044.5033
	Cover Plate Bottom	28.0000	0.8750	24.5000	7.1458	26.0750	19037.3575	19044.5033
<b>Total</b>		<b>114.95</b>		<b>3097.90</b>	<b>5385.65</b>		<b>56669.97</b>	<b>62055.62</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	26.9500 in	$S_{top} =$	2302.62 in <sup>3</sup>	y-bar =	26.9500 in	$S_{top} =$	2302.62 in <sup>3</sup>
$I_x =$	62055.62 in <sup>4</sup>	$S_{bott.} =$	2302.62 in <sup>3</sup>	$I_x =$	62055.62 in <sup>4</sup>	$S_{bott.} =$	2302.62 in <sup>3</sup>
$C_{top} =$	26.9500 in	A =	114.9500 in <sup>2</sup>	$C_{top} =$	26.9500 in	A =	114.9500 in <sup>2</sup>
$C_{bottom} =$	26.9500 in	$r_x =$	23.2346 in	$C_{bottom} =$	26.9500 in	$r_x =$	23.2346 in
J =	65.5948	Z =	2568.3138 in <sup>3</sup>	Z =	2568.3138 in <sup>3</sup>		





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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	25.2000	8.0000	201.6000	0.5250	0.0000	0.0000	0.5250	
4	Top Cover Plate	28.0000	8.0000	224.0000	1194.6667	0.0000	0.0000	1194.6667	
4	Bottom Cover Plate	28.0000	8.0000	224.0000	1194.6667	0.0000	0.0000	1194.6667	
<b>Total</b>		<b>114.95</b>		<b>919.60</b>	<b>2444.60</b>		<b>196.28</b>	<b>2640.87</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	330.11	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	330.11	in <sup>3</sup>
I <sub>y</sub> =	2640.87	in <sup>4</sup>	S <sub>left</sub> =	330.11	in <sup>3</sup>	I <sub>y</sub> =	2640.87	in <sup>4</sup>	S <sub>left</sub> =	330.11	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	114.9500	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	114.9500	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.7931	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.7931	in

Non-composite Capacities*		
	AB	AI
M	7062.86 k-ft	7062.86 k-ft
V	482.33 k	482.33 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
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AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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 Date 3/30/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

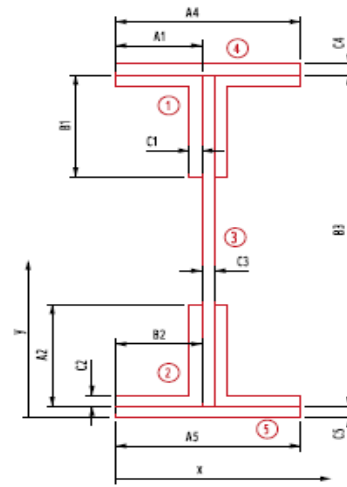
Top Angles:  $A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:  $B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:  $C_3 = 0.5000$  in  
 $*B_3 = 53.4000$  in  
 $d_o = 54.0000$  in  
 $d_o =$  stiffener spacing for shear check  
 Use "N/A" for no stiffeners

Top Cover Plate:  $C_4 = 0.8750$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:  $C_5 = 0.8750$  in  
 $A_5 = 16.0000$  in



**Girder 28-29 Section 7**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg		9.0000	53.9000	485.1000	0.4219	26.3250	6237.0506	6237.4725
	Vertical Leg		7.8750	50.9000	400.8375	18.0879	23.3250	4284.4380	4302.5259
2	Horizontal Leg		9.0000	1.2500	11.2500	0.4219	26.3250	6237.0506	6237.4725
	Vertical Leg		7.8750	4.2500	33.4688	18.0879	23.3250	4284.4380	4302.5259
3	Web Plate		26.7000	27.5750	736.2525	6344.7210	0.0000	0.0000	6344.7210
4	Cover Plate Top		14.0000	54.7125	765.9750	0.8932	27.1375	10310.2147	10311.1079
	Cover Plate Bottom		14.0000	0.4375	6.1250	0.8932	27.1375	10310.2147	10311.1079
<b>Total</b>			<b>88.45</b>		<b>2439.01</b>	<b>6383.53</b>		<b>41663.41</b>	<b>48046.93</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
y-bar =	27.5750	in	S <sub>top</sub> =	1742.41	in <sup>3</sup>	y-bar =	27.5750	in	S <sub>top</sub> =	1742.41	in <sup>3</sup>
I <sub>x</sub> =	48046.93	n <sup>4</sup>	S <sub>bott.</sub> =	1742.41	in <sup>3</sup>	I <sub>x</sub> =	48046.93	in <sup>4</sup>	S <sub>bott.</sub> =	1742.41	in <sup>3</sup>
C <sub>top</sub> =	27.5750	in	A =	88.4500	in <sup>2</sup>	C <sub>top</sub> =	27.5750	in	A =	88.4500	in <sup>2</sup>
C <sub>bottom</sub> =	27.5750	in	r <sub>x</sub> =	23.3069	in	C <sub>bottom</sub> =	27.5750	in	r <sub>x</sub> =	23.3069	in
J =	15.6990		Z =	1957.5138	in <sup>3</sup>	Z =	1957.5138		Z =	1957.5138	in <sup>3</sup>



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Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	26.7000	8.0000	213.6000	0.5563	0.0000	0.0000	0.5563	
4	Top Cover Plate	14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333	
4	Bottom Cover Plate	14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333	
<b>Total</b>		<b>88.45</b>		<b>707.60</b>	<b>1249.96</b>		<b>196.28</b>	<b>1446.24</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	180.78	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	180.78	in <sup>3</sup>
I <sub>y</sub> =	1446.24	in <sup>4</sup>	S <sub>left</sub> =	180.78	in <sup>3</sup>	I <sub>y</sub> =	1446.24	in <sup>4</sup>	S <sub>left</sub> =	180.78	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	88.4500	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	88.4500	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.0436	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.0436	in

Non-composite Capacities*		
	AB	AI
M	5383.16 k-ft	5383.16 k-ft
V	511.04 k	511.04 k

\*Compact Section

F <sub>y</sub> =	<b>33.00 ksi</b>
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AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 57.9600$  in

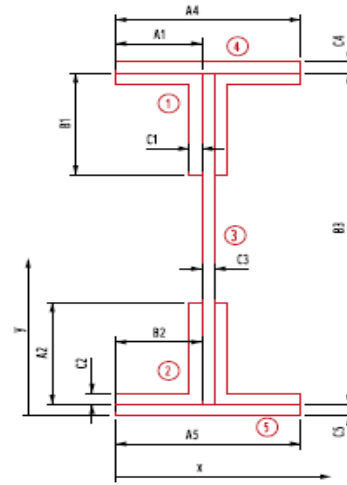
$d_o = 54.0000$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.8750$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.8750$  in  
 $A_5 = 16.0000$  in



\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	58.4600	526.1400	0.4219	28.6050	7364.2142	7364.6361
	Vertical Leg	7.8750	55.4600	436.7475	18.0879	25.6050	5162.9762	5181.0641
2	Horizontal Leg	9.0000	1.2500	11.2500	0.4219	28.6050	7364.2142	7364.6361
	Vertical Leg	7.8750	4.2500	33.4688	18.0879	25.6050	5162.9762	5181.0641
3	Web Plate	28.9800	29.8550	865.1979	8112.8583	0.0000	0.0000	8112.8583
4	Cover Plate Top	14.0000	59.2725	829.8150	0.8932	29.4175	12115.4503	12116.3435
	Cover Plate Bottom	14.0000	0.4375	6.1250	0.8932	29.4175	12115.4503	12116.3435
<b>Total</b>		<b>90.73</b>		<b>2708.74</b>	<b>8151.66</b>		<b>49285.28</b>	<b>57436.95</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	29.8550 in	S <sub>top</sub> =	1923.86 in <sup>3</sup>	y-bar =	29.8550 in	S <sub>top</sub> =	1923.86 in <sup>3</sup>
I <sub>x</sub> =	57436.95 in <sup>4</sup>	S <sub>bott.</sub> =	1923.86 in <sup>3</sup>	I <sub>x</sub> =	57436.95 in <sup>4</sup>	S <sub>bott.</sub> =	1923.86 in <sup>3</sup>
C <sub>top</sub> =	29.8550 in	A =	90.7300 in <sup>2</sup>	C <sub>top</sub> =	29.8550 in	A =	90.7300 in <sup>2</sup>
C <sub>bottom</sub> =	29.8550 in	r <sub>x</sub> =	25.1606 in	C <sub>bottom</sub> =	29.8550 in	r <sub>x</sub> =	25.1606 in
J =	15.8890	Z =	2161.7790 in <sup>3</sup>			Z =	<b>2161.7790 in<sup>3</sup></b>



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Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg		4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg		3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
1 (Right)	Horizontal Leg		4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg		3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
2 (Left)	Horizontal Leg		4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg		3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
2 (Right)	Horizontal Leg		4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg		3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
3	Web Plate		28.9800	8.0000	231.8400	0.6038	0.0000	0.0000	0.6038
4	Top Cover Plate		14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333
4	Bottom Cover Plate		14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333
<b>Total</b>			<b>90.73</b>		<b>725.84</b>	<b>1250.01</b>		<b>196.28</b>	<b>1446.29</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	180.79	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	180.79	in <sup>3</sup>
I <sub>y</sub> =	1446.29	in <sup>4</sup>	S <sub>left</sub> =	180.79	in <sup>3</sup>	I <sub>y</sub> =	1446.29	in <sup>4</sup>	S <sub>left</sub> =	180.79	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	90.7300	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	90.7300	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.9926	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.9926	in

Non-composite Capacities*		
	AB	AI
M	5944.89 k-ft	5944.89 k-ft
V	554.68 k	554.68 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
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AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:  $A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

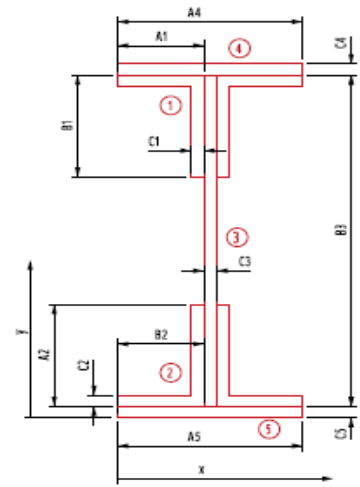
Bottom Angles:  $B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:  $C_3 = 0.5000$  in  
 $*B_3 = 62.5200$  in

$d_o = 61.0000$  in  
 $d_o =$  stiffener spacing for shear check  
 Use "N/A" for no stiffeners

Top Cover Plate:  $C_4 = 0.8750$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:  $C_5 = 0.8750$  in  
 $A_5 = 16.0000$  in



**Girder 28-29 Section 9**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	63.0200	567.1800	0.4219	30.8850	8584.9490	8585.3709
	Vertical Leg	7.8750	60.0200	472.6575	18.0879	27.8850	6123.3891	6141.4770
2	Horizontal Leg	9.0000	1.2500	11.2500	0.4219	30.8850	8584.9490	8585.3709
	Vertical Leg	7.8750	4.2500	33.4688	18.0879	27.8850	6123.3891	6141.4770
3	Web Plate	31.2600	32.1350	1004.5401	10182.2948	0.0000	0.0000	10182.2948
4	Cover Plate Top	14.0000	63.8325	893.6550	0.8932	31.6975	14066.2411	14067.1343
	Cover Plate Bottom	14.0000	0.4375	6.1250	0.8932	31.6975	14066.2411	14067.1343
<b>Total</b>		<b>93.01</b>		<b>2988.88</b>	<b>10221.10</b>		<b>57549.16</b>	<b>67770.26</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	32.1350 in	S <sub>top</sub> =	2108.92 in <sup>3</sup>	y-bar =	32.1350 in	S <sub>top</sub> =	2108.92 in <sup>3</sup>
I <sub>x</sub> =	67770.26 in <sup>4</sup>	S <sub>bott.</sub> =	2108.92 in <sup>3</sup>	I <sub>x</sub> =	67770.26 in <sup>4</sup>	S <sub>bott.</sub> =	2108.92 in <sup>3</sup>
C <sub>top</sub> =	32.1350 in	A =	93.0100 in <sup>2</sup>	C <sub>top</sub> =	32.1350 in	A =	93.0100 in <sup>2</sup>
C <sub>bottom</sub> =	32.1350 in	r <sub>x</sub> =	26.9932 in	C <sub>bottom</sub> =	32.1350 in	r <sub>x</sub> =	26.9932 in
J =	16.0790	Z =	2371.2426 in <sup>3</sup>	Z =	2371.2426		in <sup>3</sup>



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	31.2600	8.0000	250.0800	0.6513	0.0000	0.0000	0.6513	
4	Top Cover Plate	14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333	
4	Bottom Cover Plate	14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333	
<b>Total</b>		<b>93.01</b>		<b>744.08</b>	<b>1250.06</b>		<b>196.28</b>	<b>1446.33</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	180.79	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	180.79	in <sup>3</sup>
I <sub>y</sub> =	1446.33	in <sup>4</sup>	S <sub>left</sub> =	180.79	in <sup>3</sup>	I <sub>y</sub> =	1446.33	in <sup>4</sup>	S <sub>left</sub> =	180.79	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	93.0100	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	93.0100	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.9434	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.9434	in

Non-composite Capacities*		
	AB	AI
M	6520.92 k-ft	6520.92 k-ft
V	598.32 k	598.32 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 59.7600$  in

$d_o = 42.3125$  in

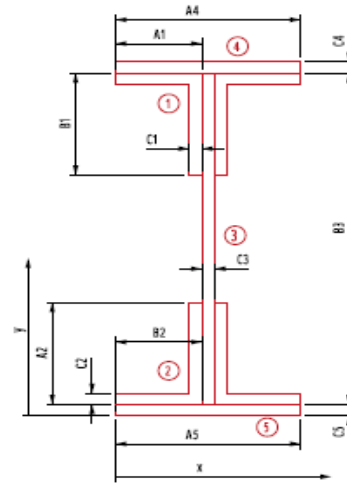
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



Girder 29-30 Section 1

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	59.8850	538.9650	0.4219	29.5050	7834.9052	7835.3271
	Vertical Leg	7.8750	56.8850	447.9694	18.0879	26.5050	5532.3058	5550.3937
2	Horizontal Leg	9.0000	0.8750	7.8750	0.4219	29.5050	7834.9052	7835.3271
	Vertical Leg	7.8750	3.8750	30.5156	18.0879	26.5050	5532.3058	5550.3937
3	Web Plate	29.8800	30.3800	907.7544	8892.4314	0.0000	0.0000	8892.4314
4	Cover Plate Top	8.0000	60.5100	484.0800	0.1667	30.1300	7262.5352	7262.7019
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	30.1300	7262.5352	7262.7019
<b>Total</b>		<b>79.63</b>		<b>2419.16</b>	<b>8929.78</b>		<b>41259.49</b>	<b>50189.28</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	30.3800 in	S <sub>top</sub> =	1652.05 in <sup>3</sup>	y-bar =	30.3800 in	S <sub>top</sub> =	1652.05 in <sup>3</sup>
I <sub>x</sub> =	50189.28 in <sup>4</sup>	S <sub>bott.</sub> =	1652.05 in <sup>3</sup>	I <sub>x</sub> =	50189.28 in <sup>4</sup>	S <sub>bott.</sub> =	1652.05 in <sup>3</sup>
C <sub>top</sub> =	30.3800 in	A =	79.6300 in <sup>2</sup>	C <sub>top</sub> =	30.3800 in	A =	79.6300 in <sup>2</sup>
C <sub>bottom</sub> =	30.3800 in	r <sub>x</sub> =	25.1054 in	C <sub>bottom</sub> =	30.3800 in	r <sub>x</sub> =	25.1054 in
J =	10.1515	Z =	1877.0310 in <sup>3</sup>	J =	10.1515	Z =	1877.0310 in <sup>3</sup>





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 Date 3/30/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg		4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg		3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
1 (Right)	Horizontal Leg		4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg		3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
2 (Left)	Horizontal Leg		4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg		3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
2 (Right)	Horizontal Leg		4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg		3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
3	Web Plate		29.8800	8.0000	239.0400	0.6225	0.0000	0.0000	0.6225
4	Top Cover Plate		8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333
4	Bottom Cover Plate		8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333
<b>Total</b>			<b>79.63</b>		<b>637.04</b>	<b>738.03</b>		<b>196.28</b>	<b>934.30</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	116.79	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	116.79	in <sup>3</sup>
I <sub>y</sub> =	934.30	in <sup>4</sup>	S <sub>left</sub> =	116.79	in <sup>3</sup>	I <sub>y</sub> =	934.30	in <sup>4</sup>	S <sub>left</sub> =	116.79	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	79.6300	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	79.6300	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.4254	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.4254	in

Non-composite Capacities*		
	AB	AI
M	5161.84 k-ft	5161.84 k-ft
V	571.90 k	571.90 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
------------------	-----------

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 52.9200$  in

$d_o = 54.0000$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



**Girder 29-30 Section 2**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg		9.0000	53.0450	477.4050	0.4219	26.0850	6123.8450	6124.2669
	Vertical Leg		7.8750	50.0450	394.1044	18.0879	23.0850	4196.7231	4214.8110
2	Horizontal Leg		9.0000	0.8750	7.8750	0.4219	26.0850	6123.8450	6124.2669
	Vertical Leg		7.8750	3.8750	30.5156	18.0879	23.0850	4196.7231	4214.8110
3	Web Plate		26.4600	26.9600	713.3616	6175.1607	0.0000	0.0000	6175.1607
4	Cover Plate Top		8.0000	53.6700	429.3600	0.1667	26.7100	5707.3928	5707.5595
	Cover Plate Bottom		8.0000	0.2500	2.0000	0.1667	26.7100	5707.3928	5707.5595
<b>Total</b>			<b>76.21</b>		<b>2054.62</b>	<b>6212.51</b>		<b>32055.92</b>	<b>38268.44</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	26.9600	in	S <sub>top</sub> =	1419.45	in <sup>3</sup>	y-bar =	26.9600	in	S <sub>top</sub> =	1419.45	in <sup>3</sup>
I <sub>x</sub> =	38268.44	in <sup>4</sup>	S <sub>bott.</sub> =	1419.45	in <sup>3</sup>	I <sub>x</sub> =	38268.44	in <sup>4</sup>	S <sub>bott.</sub> =	1419.45	in <sup>3</sup>
C <sub>top</sub> =	26.9600	in	A =	76.2100	in <sup>2</sup>	C <sub>top</sub> =	26.9600	in	A =	76.2100	in <sup>2</sup>
C <sub>bottom</sub> =	26.9600	in	r <sub>x</sub> =	22.4086	in	C <sub>bottom</sub> =	26.9600	in	r <sub>x</sub> =	22.4086	in
J =	9.8665		Z =	1610.5446	in <sup>3</sup>	Z =	1610.5446	in <sup>3</sup>			



Made By CTG  
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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	26.4600	8.0000	211.6800	0.5513	0.0000	0.0000	0.5513	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>76.21</b>		<b>609.68</b>	<b>737.96</b>		<b>196.28</b>	<b>934.23</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	116.78	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	116.78	in <sup>3</sup>
I <sub>y</sub> =	934.23	in <sup>4</sup>	S <sub>left</sub> =	116.78	in <sup>3</sup>	I <sub>y</sub> =	934.23	in <sup>4</sup>	S <sub>left</sub> =	116.78	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	76.2100	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	76.2100	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5012	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5012	in

Non-composite Capacities*		
	AB	AI
M	4429.00 k-ft	4429.00 k-ft
V	506.44 k	506.44 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
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AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



Made By CTG  
Checked By DMP

Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 49.4400$  in

$d_o = 48.0000$  in

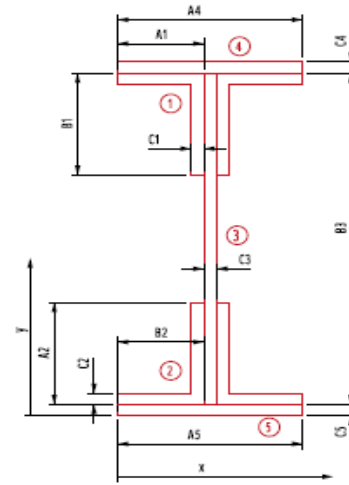
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



**Girder 29-30 Section 3**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	49.5650	446.0850	0.4219	24.3450	5334.1112	5334.5331
	Vertical Leg	7.8750	46.5650	366.6994	18.0879	21.3450	3587.9211	3606.0090
2	Horizontal Leg	9.0000	0.8750	7.8750	0.4219	24.3450	5334.1112	5334.5331
	Vertical Leg	7.8750	3.8750	30.5156	18.0879	21.3450	3587.9211	3606.0090
3	Web Plate	24.7200	25.2200	623.4384	5035.2860	0.0000	0.0000	5035.2860
4	Cover Plate Top	8.0000	50.1900	401.5200	0.1667	24.9700	4988.0072	4988.1739
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	24.9700	4988.0072	4988.1739
<b>Total</b>		<b>74.47</b>		<b>1878.13</b>	<b>5072.64</b>		<b>27820.08</b>	<b>32892.72</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	25.2200	in	S <sub>top</sub> = 1304.23 in <sup>3</sup>	y-bar =	25.2200	in	S <sub>top</sub> = 1304.23 in <sup>3</sup>
I <sub>x</sub> =	32892.72	in <sup>4</sup>	S <sub>bott.</sub> = 1304.23 in <sup>3</sup>	I <sub>x</sub> =	32892.72	in <sup>4</sup>	S <sub>bott.</sub> = 1304.23 in <sup>3</sup>
C <sub>top</sub> =	25.2200	in	A = 74.4700 in <sup>2</sup>	C <sub>top</sub> =	25.2200	in	A = 74.4700 in <sup>2</sup>
C <sub>bottom</sub> =	25.2200	in	r <sub>x</sub> = 21.0164 in	C <sub>bottom</sub> =	25.2200	in	r <sub>x</sub> = 21.0164 in
J =	9.7215		Z = 1479.4530 in <sup>3</sup>				Z = 1479.4530 in <sup>3</sup>



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	24.7200	8.0000	197.7600	0.5150	0.0000	0.0000	0.5150	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>74.47</b>		<b>595.76</b>	<b>737.92</b>		<b>196.28</b>	<b>934.20</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	116.77	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	116.77	in <sup>3</sup>
I <sub>y</sub> =	934.20	in <sup>4</sup>	S <sub>left</sub> =	116.77	in <sup>3</sup>	I <sub>y</sub> =	934.20	in <sup>4</sup>	S <sub>left</sub> =	116.77	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	74.4700	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	74.4700	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5418	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5418	in

Non-composite Capacities*		
	AB	AI
M	4068.50 k-ft	4068.50 k-ft
V	473.14 k	473.14 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
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AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 53.0400$  in

$d_o = 52.3750$  in

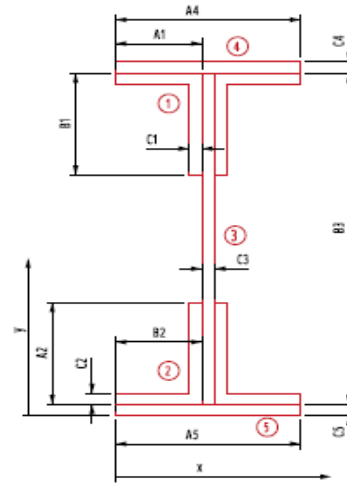
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



**Girder 29-30 Section 4**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	53.1650	478.4850	0.4219	26.1450	6152.0492	6152.4711
	Vertical Leg	7.8750	50.1650	395.0494	18.0879	23.1450	4218.5668	4236.6547
2	Horizontal Leg	9.0000	0.8750	7.8750	0.4219	26.1450	6152.0492	6152.4711
	Vertical Leg	7.8750	3.8750	30.5156	18.0879	23.1450	4218.5668	4236.6547
3	Web Plate	26.5200	27.0200	716.5704	6217.2639	0.0000	0.0000	6217.2639
4	Cover Plate Top	8.0000	53.7900	430.3200	0.1667	26.7700	5733.0632	5733.2299
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	26.7700	5733.0632	5733.2299
<b>Total</b>		<b>76.27</b>		<b>2060.82</b>	<b>6254.62</b>		<b>32207.36</b>	<b>38461.98</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	27.0200	in	$S_{top} = 1423.46$	in <sup>3</sup>	y-bar =	27.0200	in	$S_{top} = 1423.46$	in <sup>3</sup>		
$I_x =$	38461.98	n <sup>4</sup>	$S_{bott.} = 1423.46$	in <sup>3</sup>	$I_x =$	38461.98	in <sup>4</sup>	$S_{bott.} = 1423.46$	in <sup>3</sup>		
$C_{top} =$	27.0200	in	A =	76.2700	in <sup>2</sup>	$C_{top} =$	27.0200	in	A =	76.2700	in <sup>2</sup>
$C_{bottom} =$	27.0200	in	$r_x =$	22.4563	in	$C_{bottom} =$	27.0200	in	$r_x =$	22.4563	in
J =	9.8715		Z =	1615.1190	in <sup>3</sup>			Z =	1615.1190	in <sup>3</sup>	



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	26.5200	8.0000	212.1600	0.5525	0.0000	0.0000	0.5525	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>76.27</b>		<b>610.16</b>	<b>737.96</b>		<b>196.28</b>	<b>934.23</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	116.78	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	116.78	in <sup>3</sup>
I <sub>y</sub> =	934.23	in <sup>4</sup>	S <sub>left</sub> =	116.78	in <sup>3</sup>	I <sub>y</sub> =	934.23	in <sup>4</sup>	S <sub>left</sub> =	116.78	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	76.2700	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	76.2700	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.4999	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.4999	in

Non-composite Capacities*		
	AB	AI
M	4441.58 k-ft	4441.58 k-ft
V	507.59 k	507.59 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Checked By DMP

Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 59.8800$  in

$d_o = 65.1875$  in

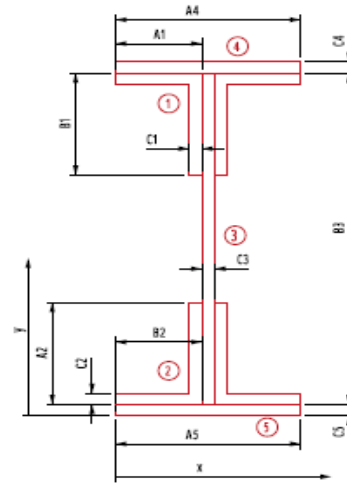
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



**Girder 29-30 Section 5**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg		9.0000	60.0050	540.0450	0.4219	29.5650	7866.8030	7867.2249
	Vertical Leg		7.8750	57.0050	448.9144	18.0879	26.5650	5557.3814	5575.4693
2	Horizontal Leg		9.0000	0.8750	7.8750	0.4219	29.5650	7866.8030	7867.2249
	Vertical Leg		7.8750	3.8750	30.5156	18.0879	26.5650	5557.3814	5575.4693
3	Web Plate		29.9400	30.4400	911.3736	8946.1079	0.0000	0.0000	8946.1079
4	Cover Plate Top		8.0000	60.6300	485.0400	0.1667	30.1900	7291.4888	7291.6555
	Cover Plate Bottom		8.0000	0.2500	2.0000	0.1667	30.1900	7291.4888	7291.6555
<b>Total</b>			<b>79.69</b>		<b>2425.76</b>	<b>8983.46</b>		<b>41431.35</b>	<b>50414.81</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	30.4400	in	$S_{top} = 1656.20$	in <sup>3</sup>	y-bar =	30.4400	in	$S_{top} = 1656.20$	in <sup>3</sup>		
$I_x =$	50414.81	n <sup>4</sup>	$S_{bott.} = 1656.20$	in <sup>3</sup>	$I_x =$	50414.81	in <sup>4</sup>	$S_{bott.} = 1656.20$	in <sup>3</sup>		
$C_{top} =$	30.4400	in	A =	79.6900	in <sup>2</sup>	$C_{top} =$	30.4400	in	A =	79.6900	in <sup>2</sup>
$C_{bottom} =$	30.4400	in	$r_x =$	25.1523	in	$C_{bottom} =$	30.4400	in	$r_x =$	25.1523	in
J =	10.1565		Z =	1881.8106	in <sup>3</sup>				Z =	1881.8106	in <sup>3</sup>





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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	29.9400	8.0000	239.5200	0.6238	0.0000	0.0000	0.6238	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>79.69</b>		<b>637.52</b>	<b>738.03</b>		<b>196.28</b>	<b>934.31</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	116.79	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	116.79	in <sup>3</sup>
I <sub>y</sub> =	934.31	in <sup>4</sup>	S <sub>left</sub> =	116.79	in <sup>3</sup>	I <sub>y</sub> =	934.31	in <sup>4</sup>	S <sub>left</sub> =	116.79	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	79.6900	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	79.6900	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.4241	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.4241	in

Non-composite Capacities*		
	AB	AI
M	5174.98 k-ft	5174.98 k-ft
V	573.05 k	573.05 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 62.7600$  in

$d_o = 65.1875$  in

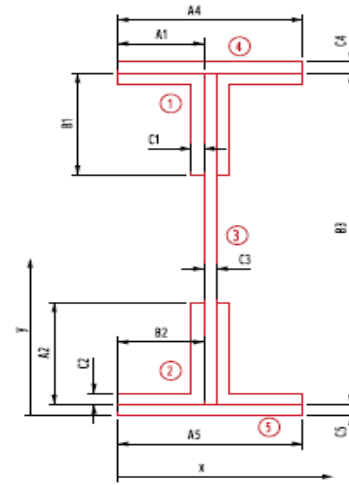
$d_o$  = stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



**Girder 30-31 Section 1**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	62.8850	565.9650	0.4219	31.0050	8651.7902	8652.2121
	Vertical Leg	7.8750	59.8850	471.5944	18.0879	28.0050	6176.2052	6194.2931
2	Horizontal Leg	9.0000	0.8750	7.8750	0.4219	31.0050	8651.7902	8652.2121
	Vertical Leg	7.8750	3.8750	30.5156	18.0879	28.0050	6176.2052	6194.2931
3	Web Plate	31.3800	31.8800	1000.3944	10300.0080	0.0000	0.0000	10300.0080
4	Cover Plate Top	8.0000	63.5100	508.0800	0.1667	31.6300	8003.6552	8003.8219
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	31.6300	8003.6552	8003.8219
<b>Total</b>		<b>81.13</b>		<b>2586.42</b>	<b>10337.36</b>		<b>45663.30</b>	<b>56000.66</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	31.8800 in	S <sub>top</sub> =	1756.61 in <sup>3</sup>	y-bar =	31.8800 in	S <sub>top</sub> =	1756.61 in <sup>3</sup>
I <sub>x</sub> =	56000.66 in <sup>4</sup>	S <sub>bott.</sub> =	1756.61 in <sup>3</sup>	I <sub>x</sub> =	56000.66 in <sup>4</sup>	S <sub>bott.</sub> =	1756.61 in <sup>3</sup>
C <sub>top</sub> =	31.8800 in	A =	81.1300 in <sup>2</sup>	C <sub>top</sub> =	31.8800 in	A =	81.1300 in <sup>2</sup>
C <sub>bottom</sub> =	31.8800 in	r <sub>x</sub> =	26.2728 in	C <sub>bottom</sub> =	31.8800 in	r <sub>x</sub> =	26.2728 in
J =	10.2765	Z =	1997.6010 in <sup>3</sup>			Z =	1997.6010 in <sup>3</sup>



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	31.3800	8.0000	251.0400	0.6538	0.0000	0.0000	0.6538	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>81.13</b>		<b>649.04</b>	<b>738.06</b>		<b>196.28</b>	<b>934.34</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	116.79	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	116.79	in <sup>3</sup>
I <sub>y</sub> =	934.34	in <sup>4</sup>	S <sub>left</sub> =	116.79	in <sup>3</sup>	I <sub>y</sub> =	934.34	in <sup>4</sup>	S <sub>left</sub> =	116.79	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	81.1300	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	81.1300	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.3936	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.3936	in

Non-composite Capacities*		
	AB	AI
M	5493.40 k-ft	5493.40 k-ft
V	600.61 k	600.61 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



Made By CTG  
Checked By DMP

Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

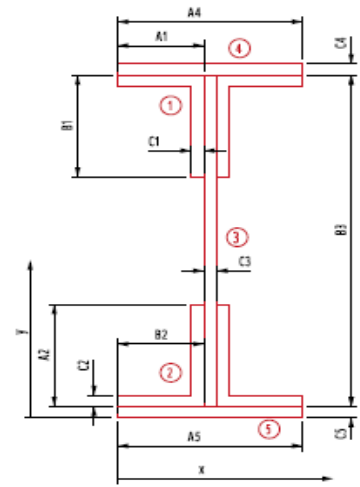
**Top Angles:**  $A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

**Bottom Angles:**  $B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

**Web Plate:**  $C_3 = 0.5000$  in  
 $*B_3 = 57.2400$  in  
 $d_o = 53.1250$  in  
 $d_o =$  stiffener spacing for shear check  
 Use "N/A" for no stiffeners

**Top Cover Plate:**  $C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

**Btm Cover Plate:**  $C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



**Girder 30-31 Section 2**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	57.3650	516.2850	0.4219	28.2450	7180.0202	7180.4421
	Vertical Leg	7.8750	54.3650	428.1244	18.0879	25.2450	5018.8164	5036.9043
2	Horizontal Leg	9.0000	0.8750	7.8750	0.4219	28.2450	7180.0202	7180.4421
	Vertical Leg	7.8750	3.8750	30.5156	18.0879	25.2450	5018.8164	5036.9043
3	Web Plate	28.6200	29.1200	833.4144	7814.2560	0.0000	0.0000	7814.2560
4	Cover Plate Top	8.0000	57.9900	463.9200	0.1667	28.8700	6667.8152	6667.9819
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	28.8700	6667.8152	6667.9819
<b>Total</b>		<b>78.37</b>		<b>2282.13</b>	<b>7851.61</b>		<b>37733.30</b>	<b>45584.91</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	29.1200 in	S <sub>top</sub> =	1565.42 in <sup>3</sup>	y-bar =	29.1200 in	S <sub>top</sub> =	1565.42 in <sup>3</sup>
I <sub>x</sub> =	45584.91 in <sup>4</sup>	S <sub>bott.</sub> =	1565.42 in <sup>3</sup>	I <sub>x</sub> =	45584.91 in <sup>4</sup>	S <sub>bott.</sub> =	1565.42 in <sup>3</sup>
C <sub>top</sub> =	29.1200 in	A =	78.3700 in <sup>2</sup>	C <sub>top</sub> =	29.1200 in	A =	78.3700 in <sup>2</sup>
C <sub>bottom</sub> =	29.1200 in	r <sub>x</sub> =	24.1177 in	C <sub>bottom</sub> =	29.1200 in	r <sub>x</sub> =	24.1177 in
J =	10.0465	Z =	1777.4910 in <sup>3</sup>			Z =	1777.4910 in <sup>3</sup>



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	28.6200	8.0000	228.9600	0.5963	0.0000	0.0000	0.5963	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>78.37</b>		<b>626.96</b>	<b>738.00</b>		<b>196.28</b>	<b>934.28</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	116.78	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	116.78	in <sup>3</sup>
I <sub>y</sub> =	934.28	in <sup>4</sup>	S <sub>left</sub> =	116.78	in <sup>3</sup>	I <sub>y</sub> =	934.28	in <sup>4</sup>	S <sub>left</sub> =	116.78	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	78.3700	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	78.3700	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.4527	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.4527	in

Non-composite Capacities*		
	AB	AI
M	4888.10 k-ft	4888.10 k-ft
V	547.79 k	547.79 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
------------------	-----------

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 52.3200$  in

$d_o = 48.0000$  in

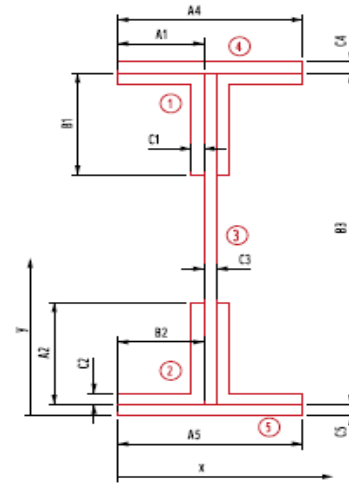
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



**Girder 30-31 Section 3**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	52.4450	472.0050	0.4219	25.7850	5983.7960	5984.2179
	Vertical Leg	7.8750	49.4450	389.3794	18.0879	22.7850	4088.3553	4106.4432
2	Horizontal Leg	9.0000	0.8750	7.8750	0.4219	25.7850	5983.7960	5984.2179
	Vertical Leg	7.8750	3.8750	30.5156	18.0879	22.7850	4088.3553	4106.4432
3	Web Plate	26.1600	26.6600	697.4256	5967.4936	0.0000	0.0000	5967.4936
4	Cover Plate Top	8.0000	53.0700	424.5600	0.1667	26.4100	5579.9048	5580.0715
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	26.4100	5579.9048	5580.0715
<b>Total</b>		<b>75.91</b>		<b>2023.76</b>	<b>6004.85</b>		<b>31304.11</b>	<b>37308.96</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	26.6600	in	S <sub>top</sub> =	1399.44	in <sup>3</sup>	y-bar =	26.6600	in	S <sub>top</sub> =	1399.44	in <sup>3</sup>
I <sub>x</sub> =	37308.96	n <sup>4</sup>	S <sub>bott.</sub> =	1399.44	in <sup>3</sup>	I <sub>x</sub> =	37308.96	in <sup>4</sup>	S <sub>bott.</sub> =	1399.44	in <sup>3</sup>
C <sub>top</sub> =	26.6600	in	A =	75.9100	in <sup>2</sup>	C <sub>top</sub> =	26.6600	in	A =	75.9100	in <sup>2</sup>
C <sub>bottom</sub> =	26.6600	in	r <sub>x</sub> =	22.1696	in	C <sub>bottom</sub> =	26.6600	in	r <sub>x</sub> =	22.1696	in
J =	9.8415		Z =	1587.7266	in <sup>3</sup>	Z =	1587.7266	in <sup>3</sup>			



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Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	26.1600	8.0000	209.2800	0.5450	0.0000	0.0000	0.5450	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>75.91</b>		<b>607.28</b>	<b>737.95</b>		<b>196.28</b>	<b>934.23</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	116.78	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	116.78	in <sup>3</sup>
I <sub>y</sub> =	934.23	in <sup>4</sup>	S <sub>left</sub> =	116.78	in <sup>3</sup>	I <sub>y</sub> =	934.23	in <sup>4</sup>	S <sub>left</sub> =	116.78	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	75.9100	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	75.9100	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5081	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5081	in

Non-composite Capacities*		
	AB	AI
M	4366.25 k-ft	4366.25 k-ft
V	500.70 k	500.70 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 50.2800$  in

$d_o = 48.0000$  in

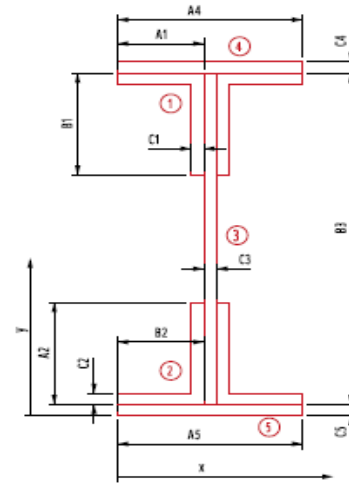
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 1.0000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 1.0000$  in  
 $A_5 = 16.0000$  in



**Girder 30-31 Section 4**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	50.9050	458.1450	0.4219	24.7650	5519.7470	5520.1689
	Vertical Leg	7.8750	47.9050	377.2519	18.0879	21.7650	3730.5074	3748.5953
2	Horizontal Leg	9.0000	1.3750	12.3750	0.4219	24.7650	5519.7470	5520.1689
	Vertical Leg	7.8750	4.3750	34.4531	18.0879	21.7650	3730.5074	3748.5953
3	Web Plate	25.1400	26.1400	657.1596	5296.3242	0.0000	0.0000	5296.3242
4	Cover Plate Top	16.0000	51.7800	828.4800	1.3333	25.6400	10518.5536	10519.8869
	Cover Plate Bottom	16.0000	0.5000	8.0000	1.3333	25.6400	10518.5536	10519.8869
<b>Total</b>		<b>90.89</b>		<b>2375.86</b>	<b>5336.01</b>		<b>39537.62</b>	<b>44873.63</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	26.1400	in	$S_{top} = 1716.67$	in <sup>3</sup>	y-bar =	26.1400	in	$S_{top} = 1716.67$	in <sup>3</sup>		
$I_x =$	44873.63	n <sup>4</sup>	$S_{bott.} = 1716.67$	in <sup>3</sup>	$I_x =$	44873.63	in <sup>4</sup>	$S_{bott.} = 1716.67$	in <sup>3</sup>		
$C_{top} =$	26.1400	in	A =	90.8900	in <sup>2</sup>	$C_{top} =$	26.1400	in	A =	90.8900	in <sup>2</sup>
$C_{bottom} =$	26.1400	in	$r_x =$	22.2197	in	$C_{bottom} =$	26.1400	in	$r_x =$	22.2197	in
J =	19.0898		Z =	1925.0586	in <sup>3</sup>				Z =	1925.0586	in <sup>3</sup>





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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	25.1400	8.0000	201.1200	0.5238	0.0000	0.0000	0.5238	
4	Top Cover Plate	16.0000	8.0000	128.0000	682.6667	0.0000	0.0000	682.6667	
4	Bottom Cover Plate	16.0000	8.0000	128.0000	682.6667	0.0000	0.0000	682.6667	
<b>Total</b>		<b>90.89</b>		<b>727.12</b>	<b>1420.60</b>		<b>196.28</b>	<b>1616.87</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	202.11	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	202.11	in <sup>3</sup>
I <sub>y</sub> =	1616.87	in <sup>4</sup>	S <sub>left</sub> =	202.11	in <sup>3</sup>	I <sub>y</sub> =	1616.87	in <sup>4</sup>	S <sub>left</sub> =	202.11	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	90.8900	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	90.8900	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.2177	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.2177	in

Non-composite Capacities*		
	AB	AI
M	5293.91 k-ft	5293.91 k-ft
V	481.18 k	481.18 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
------------------	-----------

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 49.2000$  in

$d_o = 48.0000$  in

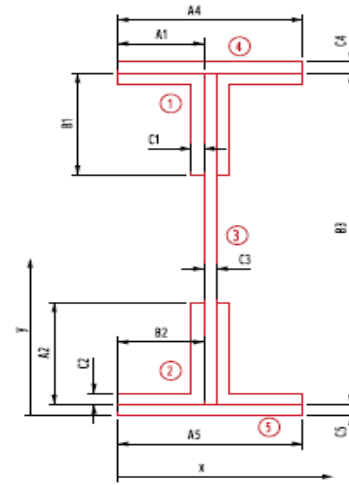
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 2.6250$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 2.6250$  in  
 $A_5 = 16.0000$  in



**Girder 30-31 Section 5**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	51.4500	463.0500	0.4219	24.2250	5281.6556	5282.0775
	Vertical Leg	7.8750	48.4500	381.5438	18.0879	21.2250	3547.6924	3565.7803
2	Horizontal Leg	9.0000	3.0000	27.0000	0.4219	24.2250	5281.6556	5282.0775
	Vertical Leg	7.8750	6.0000	47.2500	18.0879	21.2250	3547.6924	3565.7803
3	Web Plate	24.6000	27.2250	669.7350	4962.3120	0.0000	0.0000	4962.3120
4	Cover Plate Top	42.0000	53.1375	2231.7750	24.1172	25.9125	28201.2216	28225.3388
	Cover Plate Bottom	42.0000	1.3125	55.1250	24.1172	25.9125	28201.2216	28225.3388
<b>Total</b>		<b>142.35</b>		<b>3875.48</b>	<b>5047.57</b>		<b>74061.14</b>	<b>79108.71</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	27.2250 in	$S_{top} =$	2905.74 in <sup>3</sup>	y-bar =	27.2250 in	$S_{top} =$	2905.74 in <sup>3</sup>
$I_x =$	79108.71 in <sup>4</sup>	$S_{bott.} =$	2905.74 in <sup>3</sup>	$I_x =$	79108.71 in <sup>4</sup>	$S_{bott.} =$	2905.74 in <sup>3</sup>
$C_{top} =$	27.2250 in	A =	142.3500 in <sup>2</sup>	$C_{top} =$	27.2250 in	A =	142.3500 in <sup>2</sup>
$C_{bottom} =$	27.2250 in	$r_x =$	23.5740 in	$C_{bottom} =$	27.2250 in	$r_x =$	23.5740 in
J =	201.3156	Z =	3249.5738 in <sup>3</sup>	Z =	3249.5738 in <sup>3</sup>		



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
3	Web Plate	24.6000	8.0000	196.8000	0.5125	0.0000	0.0000	0.5125
4	Top Cover Plate	42.0000	8.0000	336.0000	1792.0000	0.0000	0.0000	1792.0000
4	Bottom Cover Plate	42.0000	8.0000	336.0000	1792.0000	0.0000	0.0000	1792.0000
<b>Total</b>		<b>142.35</b>		<b>1138.80</b>	<b>3639.25</b>		<b>196.28</b>	<b>3835.53</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	479.44	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	479.44	in <sup>3</sup>
I <sub>y</sub> =	3835.53	in <sup>4</sup>	S <sub>left</sub> =	479.44	in <sup>3</sup>	I <sub>y</sub> =	3835.53	in <sup>4</sup>	S <sub>left</sub> =	479.44	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	142.3500	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	142.3500	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	5.1908	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	5.1908	in

Non-composite Capacities*		
	AB	AI
M	8936.33 k-ft	8936.33 k-ft
V	470.84 k	470.84 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
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AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 50.2800$  in

$d_o = 48.0000$  in

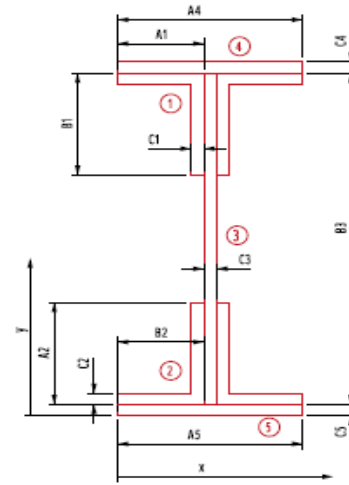
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 1.0000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 1.0000$  in  
 $A_5 = 16.0000$  in



**Girder 30-31 Section 6**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	50.9050	458.1450	0.4219	24.7650	5519.7470	5520.1689
	Vertical Leg	7.8750	47.9050	377.2519	18.0879	21.7650	3730.5074	3748.5953
2	Horizontal Leg	9.0000	1.3750	12.3750	0.4219	24.7650	5519.7470	5520.1689
	Vertical Leg	7.8750	4.3750	34.4531	18.0879	21.7650	3730.5074	3748.5953
3	Web Plate	25.1400	26.1400	657.1596	5296.3242	0.0000	0.0000	5296.3242
4	Cover Plate Top	16.0000	51.7800	828.4800	1.3333	25.6400	10518.5536	10519.8869
	Cover Plate Bottom	16.0000	0.5000	8.0000	1.3333	25.6400	10518.5536	10519.8869
<b>Total</b>		<b>90.89</b>		<b>2375.86</b>	<b>5336.01</b>		<b>39537.62</b>	<b>44873.63</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	26.1400	in	S <sub>top</sub> =	1716.67	in <sup>3</sup>	y-bar =	26.1400	in	S <sub>top</sub> =	1716.67	in <sup>3</sup>
I <sub>x</sub> =	44873.63	in <sup>4</sup>	S <sub>bott.</sub> =	1716.67	in <sup>3</sup>	I <sub>x</sub> =	44873.63	in <sup>4</sup>	S <sub>bott.</sub> =	1716.67	in <sup>3</sup>
C <sub>top</sub> =	26.1400	in	A =	90.8900	in <sup>2</sup>	C <sub>top</sub> =	26.1400	in	A =	90.8900	in <sup>2</sup>
C <sub>bottom</sub> =	26.1400	in	r <sub>x</sub> =	22.2197	in	C <sub>bottom</sub> =	26.1400	in	r <sub>x</sub> =	22.2197	in
J =	19.0898		Z =	1925.0586	in <sup>3</sup>	Z =	1925.0586		Z =	1925.0586	in <sup>3</sup>



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Date 3/22/2012  
 Date 3/30/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	25.1400	8.0000	201.1200	0.5238	0.0000	0.0000	0.5238	
4	Top Cover Plate	16.0000	8.0000	128.0000	682.6667	0.0000	0.0000	682.6667	
4	Bottom Cover Plate	16.0000	8.0000	128.0000	682.6667	0.0000	0.0000	682.6667	
<b>Total</b>		<b>90.89</b>		<b>727.12</b>	<b>1420.60</b>		<b>196.28</b>	<b>1616.87</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	202.11	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	202.11	in <sup>3</sup>
I <sub>y</sub> =	1616.87	in <sup>4</sup>	S <sub>left</sub> =	202.11	in <sup>3</sup>	I <sub>y</sub> =	1616.87	in <sup>4</sup>	S <sub>left</sub> =	202.11	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	90.8900	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	90.8900	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.2177	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.2177	in

Non-composite Capacities*		
	AB	AI
M	5293.91 k-ft	5293.91 k-ft
V	481.18 k	481.18 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 52.3200$  in

$d_o = 48.0000$  in

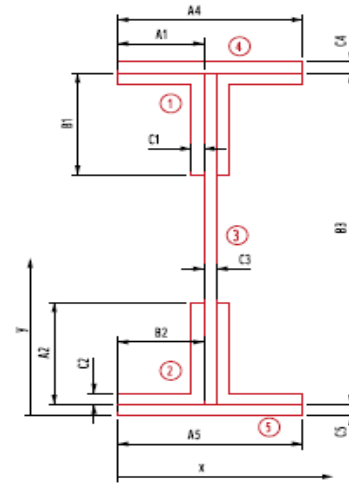
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



**Girder 30-31 Section 7**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	52.4450	472.0050	0.4219	25.7850	5983.7960	5984.2179
	Vertical Leg	7.8750	49.4450	389.3794	18.0879	22.7850	4088.3553	4106.4432
2	Horizontal Leg	9.0000	0.8750	7.8750	0.4219	25.7850	5983.7960	5984.2179
	Vertical Leg	7.8750	3.8750	30.5156	18.0879	22.7850	4088.3553	4106.4432
3	Web Plate	26.1600	26.6600	697.4256	5967.4936	0.0000	0.0000	5967.4936
4	Cover Plate Top	8.0000	53.0700	424.5600	0.1667	26.4100	5579.9048	5580.0715
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	26.4100	5579.9048	5580.0715
<b>Total</b>		<b>75.91</b>		<b>2023.76</b>	<b>6004.85</b>		<b>31304.11</b>	<b>37308.96</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	26.6600 in	$S_{top} =$	1399.44 in <sup>3</sup>	y-bar =	26.6600 in	$S_{top} =$	1399.44 in <sup>3</sup>
$I_x =$	37308.96 in <sup>4</sup>	$S_{bott.} =$	1399.44 in <sup>3</sup>	$I_x =$	37308.96 in <sup>4</sup>	$S_{bott.} =$	1399.44 in <sup>3</sup>
$C_{top} =$	26.6600 in	A =	75.9100 in <sup>2</sup>	$C_{top} =$	26.6600 in	A =	75.9100 in <sup>2</sup>
$C_{bottom} =$	26.6600 in	$r_x =$	22.1696 in	$C_{bottom} =$	26.6600 in	$r_x =$	22.1696 in
J =	9.8415	Z =	1587.7266 in <sup>3</sup>			Z =	1587.7266 in <sup>3</sup>



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Date 3/22/2012  
 Date 3/30/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	26.1600	8.0000	209.2800	0.5450	0.0000	0.0000	0.5450	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>75.91</b>		<b>607.28</b>	<b>737.95</b>		<b>196.28</b>	<b>934.23</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	116.78	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	116.78	in <sup>3</sup>
I <sub>y</sub> =	934.23	in <sup>4</sup>	S <sub>left</sub> =	116.78	in <sup>3</sup>	I <sub>y</sub> =	934.23	in <sup>4</sup>	S <sub>left</sub> =	116.78	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	75.9100	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	75.9100	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5081	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5081	in

Non-composite Capacities*		
	AB	AI
M	4366.25 k-ft	4366.25 k-ft
V	500.70 k	500.70 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 57.3600$  in

$d_o = 51.0000$  in

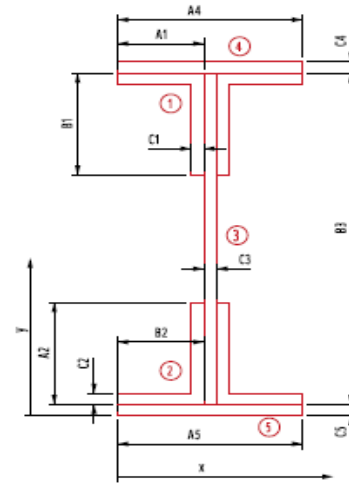
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



**Girder 30-31 Section 8**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	57.4850	517.3650	0.4219	28.3050	7210.5572	7210.9791
	Vertical Leg	7.8750	54.4850	429.0694	18.0879	25.3050	5042.7013	5060.7892
2	Horizontal Leg	9.0000	0.8750	7.8750	0.4219	28.3050	7210.5572	7210.9791
	Vertical Leg	7.8750	3.8750	30.5156	18.0879	25.3050	5042.7013	5060.7892
3	Web Plate	28.6800	29.1800	836.8824	7863.5053	0.0000	0.0000	7863.5053
4	Cover Plate Top	8.0000	58.1100	464.8800	0.1667	28.9300	6695.5592	6695.7259
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	28.9300	6695.5592	6695.7259
<b>Total</b>		<b>78.43</b>		<b>2288.59</b>	<b>7900.86</b>		<b>37897.64</b>	<b>45798.49</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	29.1800 in	S <sub>top</sub> =	1569.52 in <sup>3</sup>	y-bar =	29.1800 in	S <sub>top</sub> =	1569.52 in <sup>3</sup>
I <sub>x</sub> =	45798.49 in <sup>4</sup>	S <sub>bott.</sub> =	1569.52 in <sup>3</sup>	I <sub>x</sub> =	45798.49 in <sup>4</sup>	S <sub>bott.</sub> =	1569.52 in <sup>3</sup>
C <sub>top</sub> =	29.1800 in	A =	78.4300 in <sup>2</sup>	C <sub>top</sub> =	29.1800 in	A =	78.4300 in <sup>2</sup>
C <sub>bottom</sub> =	29.1800 in	r <sub>x</sub> =	24.1649 in	C <sub>bottom</sub> =	29.1800 in	r <sub>x</sub> =	24.1649 in
J =	10.0515	Z =	1782.1950 in <sup>3</sup>			Z =	1782.1950 in <sup>3</sup>





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Date 3/22/2012  
 Date 3/30/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	28.6800	8.0000	229.4400	0.5975	0.0000	0.0000	0.5975	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>78.43</b>		<b>627.44</b>	<b>738.00</b>		<b>196.28</b>	<b>934.28</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	116.78	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	116.78	in <sup>3</sup>
I <sub>y</sub> =	934.28	in <sup>4</sup>	S <sub>left</sub> =	116.78	in <sup>3</sup>	I <sub>y</sub> =	934.28	in <sup>4</sup>	S <sub>left</sub> =	116.78	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	78.4300	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	78.4300	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.4514	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.4514	in

Non-composite Capacities*		
	AB	AI
M	4901.04 k-ft	4901.04 k-ft
V	548.94 k	548.94 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
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AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

**Top Angles:**

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

**Bottom Angles:**

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

**Web Plate:**

$C_3 = 0.5000$  in  
 $*B_3 = 62.8800$  in

$d_o = 65.1879$  in

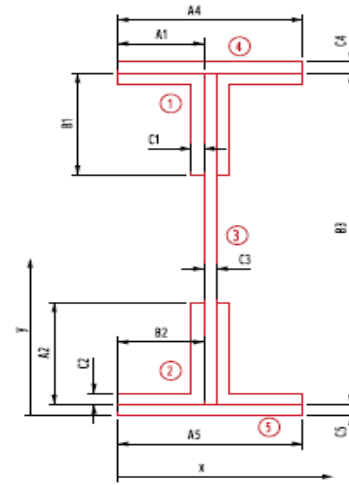
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

**Top Cover Plate:**

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

**Btm Cover Plate:**

$C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



**Girder 30-31 Section 9**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	63.0050	567.0450	0.4219	31.0650	8685.3080	8685.7299
	Vertical Leg	7.8750	60.0050	472.5394	18.0879	28.0650	6202.6983	6220.7862
2	Horizontal Leg	9.0000	0.8750	7.8750	0.4219	31.0650	8685.3080	8685.7299
	Vertical Leg	7.8750	3.8750	30.5156	18.0879	28.0650	6202.6983	6220.7862
3	Web Plate	31.4400	31.9400	1004.1936	10359.2033	0.0000	0.0000	10359.2033
4	Cover Plate Top	8.0000	63.6300	509.0400	0.1667	31.6900	8034.0488	8034.2155
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	31.6900	8034.0488	8034.2155
<b>Total</b>		<b>81.19</b>		<b>2593.21</b>	<b>10396.56</b>		<b>45844.11</b>	<b>56240.67</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	31.9400	in	S <sub>top</sub> =	1760.82	in <sup>3</sup>	y-bar =	31.9400	in	S <sub>top</sub> =	1760.82	in <sup>3</sup>
I <sub>x</sub> =	56240.67	in <sup>4</sup>	S <sub>bott.</sub> =	1760.82	in <sup>3</sup>	I <sub>x</sub> =	56240.67	in <sup>4</sup>	S <sub>bott.</sub> =	1760.82	in <sup>3</sup>
C <sub>top</sub> =	31.9400	in	A =	81.1900	in <sup>2</sup>	C <sub>top</sub> =	31.9400	in	A =	81.1900	in <sup>2</sup>
C <sub>bottom</sub> =	31.9400	in	r <sub>x</sub> =	26.3193	in	C <sub>bottom</sub> =	31.9400	in	r <sub>x</sub> =	26.3193	in
J =	10.2815		Z =	2002.4706	in <sup>3</sup>	Z =	2002.4706	in <sup>3</sup>			



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Date 3/22/2012  
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Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	31.4400	8.0000	251.5200	0.6550	0.0000	0.0000	0.6550	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>81.19</b>		<b>649.52</b>	<b>738.06</b>		<b>196.28</b>	<b>934.34</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	116.79	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	116.79	in <sup>3</sup>
I <sub>y</sub> =	934.34	in <sup>4</sup>	S <sub>left</sub> =	116.79	in <sup>3</sup>	I <sub>y</sub> =	934.34	in <sup>4</sup>	S <sub>left</sub> =	116.79	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	81.1900	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	81.1900	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.3923	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.3923	in

Non-composite Capacities*		
	AB	AI
M	5506.79 k-ft	5506.79 k-ft
V	601.76 k	601.76 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

**Top Angles:**

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

**Bottom Angles:**

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

**Web Plate:**

$C_3 = 0.5000$  in  
 $*B_3 = 60.1200$  in

$d_o = 65.1879$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

**Top Cover Plate:**

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

**Btm Cover Plate:**

$C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



**Girder 31-32 Section 1**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	60.2450	542.2050	0.4219	29.6850	7930.7930	7931.2149
	Vertical Leg	7.8750	57.2450	450.8044	18.0879	26.6850	5607.7026	5625.7905
2	Horizontal Leg	9.0000	0.8750	7.8750	0.4219	29.6850	7930.7930	7931.2149
	Vertical Leg	7.8750	3.8750	30.5156	18.0879	26.6850	5607.7026	5625.7905
3	Web Plate	30.0600	30.5600	918.6336	9054.1081	0.0000	0.0000	9054.1081
4	Cover Plate Top	8.0000	60.8700	486.9600	0.1667	30.3100	7349.5688	7349.7355
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	30.3100	7349.5688	7349.7355
<b>Total</b>		<b>79.81</b>		<b>2438.99</b>	<b>9091.46</b>		<b>41776.13</b>	<b>50867.59</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	30.5600	in	$S_{top} = 1664.52$	in <sup>3</sup>	y-bar =	30.5600	in	$S_{top} = 1664.52$	in <sup>3</sup>		
$I_x =$	50867.59	n <sup>4</sup>	$S_{bott.} = 1664.52$	in <sup>3</sup>	$I_x =$	50867.59	in <sup>4</sup>	$S_{bott.} = 1664.52$	in <sup>3</sup>		
$C_{top} =$	30.5600	in	A =	79.8100	in <sup>2</sup>	$C_{top} =$	30.5600	in	A =	79.8100	in <sup>2</sup>
$C_{bottom} =$	30.5600	in	$r_x =$	25.2460	in	$C_{bottom} =$	30.5600	in	$r_x =$	25.2460	in
J =	10.1665		Z =	1891.3806	in <sup>3</sup>				Z =	1891.3806	in <sup>3</sup>



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Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	30.0600	8.0000	240.4800	0.6263	0.0000	0.0000	0.6263	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>79.81</b>		<b>638.48</b>	<b>738.03</b>		<b>196.28</b>	<b>934.31</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	116.79	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	116.79	in <sup>3</sup>
I <sub>y</sub> =	934.31	in <sup>4</sup>	S <sub>left</sub> =	116.79	in <sup>3</sup>	I <sub>y</sub> =	934.31	in <sup>4</sup>	S <sub>left</sub> =	116.79	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	79.8100	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	79.8100	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.4215	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.4215	in

Non-composite Capacities*		
	AB	AI
M	5201.30 k-ft	5201.30 k-ft
V	575.35 k	575.35 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 53.2800$  in

$d_o = 55.6875$  in

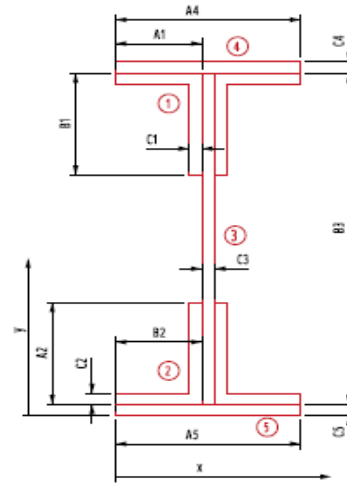
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



Girder 31-32 Section 2

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	53.4050	480.6450	0.4219	26.2650	6208.6520	6209.0739
	Vertical Leg	7.8750	50.4050	396.9394	18.0879	23.2650	4262.4243	4280.5122
2	Horizontal Leg	9.0000	0.8750	7.8750	0.4219	26.2650	6208.6520	6209.0739
	Vertical Leg	7.8750	3.8750	30.5156	18.0879	23.2650	4262.4243	4280.5122
3	Web Plate	26.6400	27.1400	723.0096	6302.0436	0.0000	0.0000	6302.0436
4	Cover Plate Top	8.0000	54.0300	432.2400	0.1667	26.8900	5784.5768	5784.7435
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	26.8900	5784.5768	5784.7435
<b>Total</b>		<b>76.39</b>		<b>2073.22</b>	<b>6339.40</b>		<b>32511.31</b>	<b>38850.70</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	27.1400	in	S <sub>top</sub> = 1431.49 in <sup>3</sup>	y-bar =	27.1400	in	S <sub>top</sub> = 1431.49 in <sup>3</sup>
I <sub>x</sub> =	38850.70	n <sup>4</sup>	S <sub>bott.</sub> = 1431.49 in <sup>3</sup>	I <sub>x</sub> =	38850.70	in <sup>4</sup>	S <sub>bott.</sub> = 1431.49 in <sup>3</sup>
C <sub>top</sub> =	27.1400	in	A = 76.3900 in <sup>2</sup>	C <sub>top</sub> =	27.1400	in	A = 76.3900 in <sup>2</sup>
C <sub>bottom</sub> =	27.1400	in	r <sub>x</sub> = 22.5518 in	C <sub>bottom</sub> =	27.1400	in	r <sub>x</sub> = 22.5518 in
J =	9.8815		Z = 1624.2786 in <sup>3</sup>				Z = 1624.2786 in <sup>3</sup>



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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	26.6400	8.0000	213.1200	0.5550	0.0000	0.0000	0.5550	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>76.39</b>		<b>611.12</b>	<b>737.96</b>		<b>196.28</b>	<b>934.24</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	116.78	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	116.78	in <sup>3</sup>
I <sub>y</sub> =	934.24	in <sup>4</sup>	S <sub>left</sub> =	116.78	in <sup>3</sup>	I <sub>y</sub> =	934.24	in <sup>4</sup>	S <sub>left</sub> =	116.78	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	76.3900	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	76.3900	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.4971	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.4971	in

Non-composite Capacities*		
	AB	AI
M	4466.77 k-ft	4466.77 k-ft
V	509.89 k	509.89 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
------------------	-----------

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 49.6800$  in

$d_o = 54.0000$  in

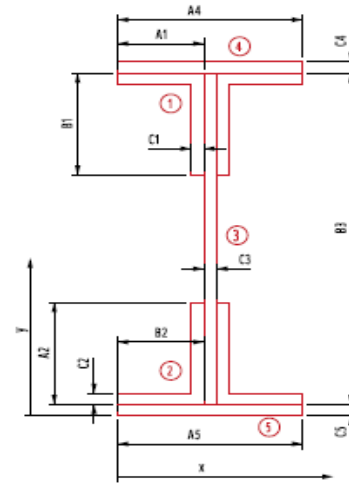
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



**Girder 31-32 Section 3**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	49.8050	448.2450	0.4219	24.4650	5386.8260	5387.2479
	Vertical Leg	7.8750	46.8050	368.5894	18.0879	21.4650	3628.3765	3646.4644
2	Horizontal Leg	9.0000	0.8750	7.8750	0.4219	24.4650	5386.8260	5387.2479
	Vertical Leg	7.8750	3.8750	30.5156	18.0879	21.4650	3628.3765	3646.4644
3	Web Plate	24.8400	25.3400	629.4456	5108.9720	0.0000	0.0000	5108.9720
4	Cover Plate Top	8.0000	50.4300	403.4400	0.1667	25.0900	5036.0648	5036.2315
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	25.0900	5036.0648	5036.2315
<b>Total</b>		<b>74.59</b>		<b>1890.11</b>	<b>5146.32</b>		<b>28102.53</b>	<b>33248.86</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	25.3400 in	S <sub>top</sub> =	1312.11 in <sup>3</sup>	y-bar =	25.3400 in	S <sub>top</sub> =	1312.11 in <sup>3</sup>
I <sub>x</sub> =	33248.86 in <sup>4</sup>	S <sub>bott.</sub> =	1312.11 in <sup>3</sup>	I <sub>x</sub> =	33248.86 in <sup>4</sup>	S <sub>bott.</sub> =	1312.11 in <sup>3</sup>
C <sub>top</sub> =	25.3400 in	A =	74.5900 in <sup>2</sup>	C <sub>top</sub> =	25.3400 in	A =	74.5900 in <sup>2</sup>
C <sub>bottom</sub> =	25.3400 in	r <sub>x</sub> =	21.1129 in	C <sub>bottom</sub> =	25.3400 in	r <sub>x</sub> =	21.1129 in
J =	9.7315	Z =	1488.3966 in <sup>3</sup>	Z =	1488.3966 in <sup>3</sup>		





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Date 3/22/2012  
Date 3/30/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	24.8400	8.0000	198.7200	0.5175	0.0000	0.0000	0.5175	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>74.59</b>		<b>596.72</b>	<b>737.92</b>		<b>196.28</b>	<b>934.20</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	116.77	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	116.77	in <sup>3</sup>
I <sub>y</sub> =	934.20	in <sup>4</sup>	S <sub>left</sub> =	116.77	in <sup>3</sup>	I <sub>y</sub> =	934.20	in <sup>4</sup>	S <sub>left</sub> =	116.77	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	74.5900	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	74.5900	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5390	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5390	in

Non-composite Capacities*		
	AB	AI
M	4093.09 k-ft	4093.09 k-ft
V	475.44 k	475.44 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
------------------	-----------

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 55.0800$  in

$d_o = 58.0625$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



Girder 31-32 Section 4

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg		9.0000	55.2050	496.8450	0.4219	27.1650	6641.4350	6641.8569
	Vertical Leg		7.8750	52.2050	411.1144	18.0879	24.1650	4598.5844	4616.6723
2	Horizontal Leg		9.0000	0.8750	7.8750	0.4219	27.1650	6641.4350	6641.8569
	Vertical Leg		7.8750	3.8750	30.5156	18.0879	24.1650	4598.5844	4616.6723
3	Web Plate		27.5400	28.0400	772.2216	6962.5857	0.0000	0.0000	6962.5857
4	Cover Plate Top		8.0000	55.8300	446.6400	0.1667	27.7900	6178.2728	6178.4395
	Cover Plate Bottom		8.0000	0.2500	2.0000	0.1667	27.7900	6178.2728	6178.4395
<b>Total</b>			<b>77.29</b>		<b>2167.21</b>	<b>6999.94</b>		<b>34836.58</b>	<b>41836.52</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	28.0400	in	S <sub>top</sub> =	1492.03	in <sup>3</sup>	y-bar =	28.0400	in	S <sub>top</sub> =	1492.03	in <sup>3</sup>
I <sub>x</sub> =	41836.52	n <sup>4</sup>	S <sub>bott.</sub> =	1492.03	in <sup>3</sup>	I <sub>x</sub> =	41836.52	in <sup>4</sup>	S <sub>bott.</sub> =	1492.03	in <sup>3</sup>
C <sub>top</sub> =	28.0400	in	A =	77.2900	in <sup>2</sup>	C <sub>top</sub> =	28.0400	in	A =	77.2900	in <sup>2</sup>
C <sub>bottom</sub> =	28.0400	in	r <sub>x</sub> =	23.2657	in	C <sub>bottom</sub> =	28.0400	in	r <sub>x</sub> =	23.2657	in
J =	9.9565		Z =	1693.4346	in <sup>3</sup>	Z =	1693.4346		Z =	1693.4346	in <sup>3</sup>



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Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	27.5400	8.0000	220.3200	0.5738	0.0000	0.0000	0.5738	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>77.29</b>		<b>618.32</b>	<b>737.98</b>		<b>196.28</b>	<b>934.26</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	116.78	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	116.78	in <sup>3</sup>
I <sub>y</sub> =	934.26	in <sup>4</sup>	S <sub>left</sub> =	116.78	in <sup>3</sup>	I <sub>y</sub> =	934.26	in <sup>4</sup>	S <sub>left</sub> =	116.78	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	77.2900	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	77.2900	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.4767	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.4767	in

Non-composite Capacities*		
	AB	AI
M	4656.95 k-ft	4656.95 k-ft
V	527.12 k	527.12 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 64.0800$  in

$d_o = 43.8125$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



Girder 31-32 Section 5

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg		9.0000	64.2050	577.8450	0.4219	31.6650	9024.0500	9024.4719
	Vertical Leg		7.8750	61.2050	481.9894	18.0879	28.6650	6470.7475	6488.8354
2	Horizontal Leg		9.0000	0.8750	7.8750	0.4219	31.6650	9024.0500	9024.4719
	Vertical Leg		7.8750	3.8750	30.5156	18.0879	28.6650	6470.7475	6488.8354
3	Web Plate		32.0400	32.5400	1042.5816	10963.6779	0.0000	0.0000	10963.6779
4	Cover Plate Top		8.0000	64.8300	518.6400	0.1667	32.2900	8341.1528	8341.3195
	Cover Plate Bottom		8.0000	0.2500	2.0000	0.1667	32.2900	8341.1528	8341.3195
<b>Total</b>			<b>81.79</b>		<b>2661.45</b>	<b>11001.03</b>		<b>47671.90</b>	<b>58672.93</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	32.5400	in	$S_{top} = 1803.10$	in <sup>3</sup>	y-bar =	32.5400	in	$S_{top} = 1803.10$	in <sup>3</sup>		
$I_x =$	58672.93	n <sup>4</sup>	$S_{bott.} = 1803.10$	in <sup>3</sup>	$I_x =$	58672.93	in <sup>4</sup>	$S_{bott.} = 1803.10$	in <sup>3</sup>		
$C_{top} =$	32.5400	in	A =	81.7900	in <sup>2</sup>	$C_{top} =$	32.5400	in	A =	81.7900	in <sup>2</sup>
$C_{bottom} =$	32.5400	in	$r_x =$	26.7836	in	$C_{bottom} =$	32.5400	in	$r_x =$	26.7836	in
J =	10.3315		Z =	2051.3646	in <sup>3</sup>				Z =	2051.3646	in <sup>3</sup>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	32.0400	8.0000	256.3200	0.6675	0.0000	0.0000	0.6675	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>81.79</b>		<b>654.32</b>	<b>738.07</b>		<b>196.28</b>	<b>934.35</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	116.79	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	116.79	in <sup>3</sup>
I <sub>y</sub> =	934.35	in <sup>4</sup>	S <sub>left</sub> =	116.79	in <sup>3</sup>	I <sub>y</sub> =	934.35	in <sup>4</sup>	S <sub>left</sub> =	116.79	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	81.7900	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	81.7900	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.3799	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.3799	in

Non-composite Capacities*		
	AB	AI
M	5641.25 k-ft	5641.25 k-ft
V	613.25 k	613.25 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
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AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/22/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 67.6800$  in

$d_o = 60.0000$  in

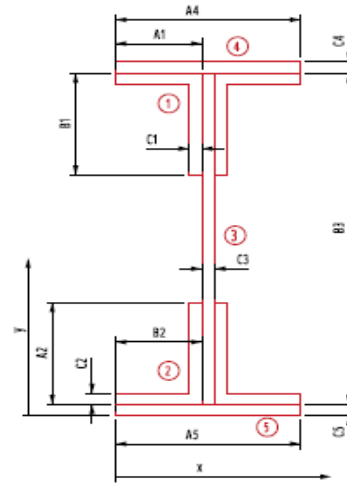
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.7500$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.7500$  in  
 $A_5 = 16.0000$  in



**Girder 32-33 Section 1**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	68.0550	612.4950	0.4219	33.4650	10079.1560	10079.5779
	Vertical Leg	7.8750	65.0550	512.3081	18.0879	30.4650	7308.9153	7327.0032
2	Horizontal Leg	9.0000	1.1250	10.1250	0.4219	33.4650	10079.1560	10079.5779
	Vertical Leg	7.8750	4.1250	32.4844	18.0879	30.4650	7308.9153	7327.0032
3	Web Plate	33.8400	34.5900	1170.5256	12917.2424	0.0000	0.0000	12917.2424
4	Cover Plate Top	12.0000	68.8050	825.6600	0.5625	34.2150	14047.9947	14048.5572
	Cover Plate Bottom	12.0000	0.3750	4.5000	0.5625	34.2150	14047.9947	14048.5572
<b>Total</b>		<b>91.59</b>		<b>3168.10</b>	<b>12955.39</b>		<b>62872.13</b>	<b>75827.52</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	34.5900 in	S <sub>top</sub> =	2192.18 in <sup>3</sup>	y-bar =	34.5900 in	S <sub>top</sub> =	2192.18 in <sup>3</sup>
I <sub>x</sub> =	75827.52 in <sup>4</sup>	S <sub>bott.</sub> =	2192.18 in <sup>3</sup>	I <sub>x</sub> =	75827.52 in <sup>4</sup>	S <sub>bott.</sub> =	2192.18 in <sup>3</sup>
C <sub>top</sub> =	34.5900 in	A =	91.5900 in <sup>2</sup>	C <sub>top</sub> =	34.5900 in	A =	91.5900 in <sup>2</sup>
C <sub>bottom</sub> =	34.5900 in	r <sub>x</sub> =	28.7733 in	C <sub>bottom</sub> =	34.5900 in	r <sub>x</sub> =	28.7733 in
J =	13.6481	Z =	2475.9266 in <sup>3</sup>			Z =	2475.9266 in <sup>3</sup>



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Date 3/22/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	33.8400	8.0000	270.7200	0.7050	0.0000	0.0000	0.7050	
4	Top Cover Plate	12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000	
4	Bottom Cover Plate	12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000	
<b>Total</b>		<b>91.59</b>		<b>732.72</b>	<b>1079.44</b>		<b>196.28</b>	<b>1275.72</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	159.47	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	159.47	in <sup>3</sup>
I <sub>y</sub> =	1275.72	in <sup>4</sup>	S <sub>left</sub> =	159.47	in <sup>3</sup>	I <sub>y</sub> =	1275.72	in <sup>4</sup>	S <sub>left</sub> =	159.47	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	91.5900	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	91.5900	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.7321	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.7321	in

Non-composite Capacities*		
	AB	AI
M	6028.50 k-ft	6028.50 k-ft
V	647.53 k	647.53 k

\*Noncompact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/22/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 61.9200$  in

$d_o = 60.0000$  in

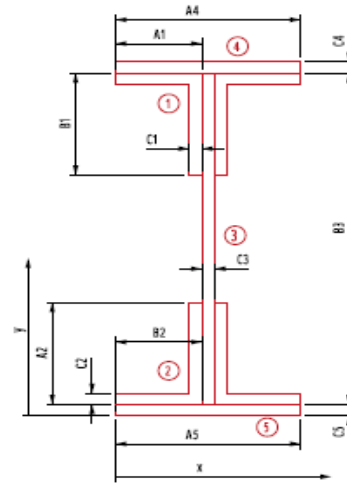
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.7500$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.7500$  in  
 $A_5 = 16.0000$  in



Girder 32-33 Section 2

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	62.2950	560.6550	0.4219	30.5850	8418.9800	8419.4019
	Vertical Leg	7.8750	59.2950	466.9481	18.0879	27.5850	5992.3413	6010.4292
2	Horizontal Leg	9.0000	1.1250	10.1250	0.4219	30.5850	8418.9800	8419.4019
	Vertical Leg	7.8750	4.1250	32.4844	18.0879	27.5850	5992.3413	6010.4292
3	Web Plate	30.9600	31.7100	981.7416	9891.9429	0.0000	0.0000	9891.9429
4	Cover Plate Top	12.0000	63.0450	756.5400	0.5625	31.3350	11782.5867	11783.1492
	Cover Plate Bottom	12.0000	0.3750	4.5000	0.5625	31.3350	11782.5867	11783.1492
<b>Total</b>		<b>88.71</b>		<b>2812.99</b>	<b>9930.09</b>		<b>52387.82</b>	<b>62317.90</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	31.7100 in	S <sub>top</sub> =	1965.24 in <sup>3</sup>	y-bar =	31.7100 in	S <sub>top</sub> =	1965.24 in <sup>3</sup>
I <sub>x</sub> =	62317.90 in <sup>4</sup>	S <sub>bott.</sub> =	1965.24 in <sup>3</sup>	I <sub>x</sub> =	62317.90 in <sup>4</sup>	S <sub>bott.</sub> =	1965.24 in <sup>3</sup>
C <sub>top</sub> =	31.7100 in	A =	88.7100 in <sup>2</sup>	C <sub>top</sub> =	31.7100 in	A =	88.7100 in <sup>2</sup>
C <sub>bottom</sub> =	31.7100 in	r <sub>x</sub> =	26.5045 in	C <sub>bottom</sub> =	31.7100 in	r <sub>x</sub> =	26.5045 in
J =	13.4081	Z =	2216.2946 in <sup>3</sup>	Z =	2216.2946 in <sup>3</sup>		





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Date 3/22/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	30.9600	8.0000	247.6800	0.6450	0.0000	0.0000	0.6450	
4	Top Cover Plate	12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000	
4	Bottom Cover Plate	12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000	
<b>Total</b>		<b>88.71</b>		<b>709.68</b>	<b>1079.38</b>		<b>196.28</b>	<b>1275.66</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	159.46	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	159.46	in <sup>3</sup>
I <sub>y</sub> =	1275.66	in <sup>4</sup>	S <sub>left</sub> =	159.46	in <sup>3</sup>	I <sub>y</sub> =	1275.66	in <sup>4</sup>	S <sub>left</sub> =	159.46	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	88.7100	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	88.7100	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.7921	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.7921	in

Non-composite Capacities*		
	AB	AI
M	6094.81 k-ft	6094.81 k-ft
V	592.57 k	592.57 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/22/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 59.4000$  in

$d_o = 60.0000$  in

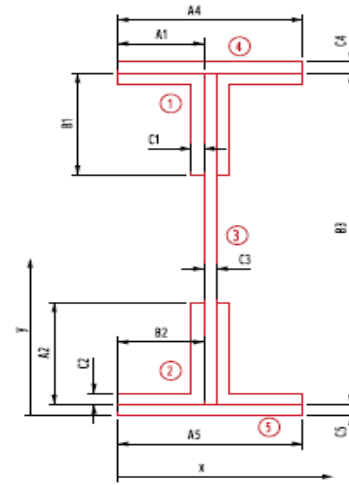
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 1.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 1.5000$  in  
 $A_5 = 16.0000$  in



**Girder 32-33 Section 3**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	60.5250	544.7250	0.4219	29.3250	7739.6006	7740.0225
	Vertical Leg	7.8750	57.5250	453.0094	18.0879	26.3250	5457.4193	5475.5072
2	Horizontal Leg	9.0000	1.8750	16.8750	0.4219	29.3250	7739.6006	7740.0225
	Vertical Leg	7.8750	4.8750	38.3906	18.0879	26.3250	5457.4193	5475.5072
3	Web Plate	29.7000	31.2000	926.6400	8732.6910	0.0000	0.0000	8732.6910
4	Cover Plate Top	24.0000	61.6500	1479.6000	4.5000	30.4500	22252.8600	22257.3600
	Cover Plate Bottom	24.0000	0.7500	18.0000	4.5000	30.4500	22252.8600	22257.3600
<b>Total</b>		<b>111.45</b>		<b>3477.24</b>	<b>8778.71</b>		<b>70899.76</b>	<b>79678.47</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	31.2000	in	$S_{top} = 2553.80$	in <sup>3</sup>	y-bar =	31.2000	in	$S_{top} = 2553.80$	in <sup>3</sup>		
$I_x =$	79678.47	in <sup>4</sup>	$S_{bott.} = 2553.80$	in <sup>3</sup>	$I_x =$	79678.47	in <sup>4</sup>	$S_{bott.} = 2553.80$	in <sup>3</sup>		
$C_{top} =$	31.2000	in	A =	111.4500	in <sup>2</sup>	$C_{top} =$	31.2000	in	A =	111.4500	in <sup>2</sup>
$C_{bottom} =$	31.2000	in	$r_x =$	26.7381	in	$C_{bottom} =$	31.2000	in	$r_x =$	26.7381	in
J =	44.8031		Z =	2845.1138	in <sup>3</sup>	Z =	2845.1138	in <sup>3</sup>			



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Date 3/22/2012  
 Date 4/2/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
3	Web Plate	29.7000	8.0000	237.6000	0.6188	0.0000	0.0000	0.6188
4	Top Cover Plate	24.0000	8.0000	192.0000	1024.0000	0.0000	0.0000	1024.0000
4	Bottom Cover Plate	24.0000	8.0000	192.0000	1024.0000	0.0000	0.0000	1024.0000
<b>Total</b>		<b>111.45</b>		<b>891.60</b>	<b>2103.36</b>		<b>196.28</b>	<b>2299.63</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	287.45	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	287.45	in <sup>3</sup>
I <sub>y</sub> =	2299.63	in <sup>4</sup>	S <sub>left</sub> =	287.45	in <sup>3</sup>	I <sub>y</sub> =	2299.63	in <sup>4</sup>	S <sub>left</sub> =	287.45	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	111.4500	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	111.4500	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.5424	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.5424	in

Non-composite Capacities*		
	AB	AI
M	7824.06 k-ft	7824.06 k-ft
V	568.46 k	568.46 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
------------------	-----------

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/22/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

**Top Angles:**

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

**Bottom Angles:**

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

**Web Plate:**

$C_3 = 0.5000$  in  
 $*B_3 = 56.7600$  in

$d_o = 56.7500$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

**Top Cover Plate:**

$C_4 = 2.7500$  in  
 $A_4 = 16.0000$  in

**Btm Cover Plate:**

$C_5 = 2.7500$  in  
 $A_5 = 16.0000$  in



**Girder 32-33 Section 4**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	59.1350	532.2150	0.4219	28.0050	7058.5202	7058.9421
	Vertical Leg	7.8750	56.1350	442.0631	18.0879	25.0050	4923.8439	4941.9318
2	Horizontal Leg	9.0000	3.1250	28.1250	0.4219	28.0050	7058.5202	7058.9421
	Vertical Leg	7.8750	6.1250	48.2344	18.0879	25.0050	4923.8439	4941.9318
3	Web Plate	28.3800	31.1300	883.4694	7619.3148	0.0000	0.0000	7619.3148
4	Cover Plate Top	44.0000	60.8850	2678.9400	27.7292	29.7550	38955.8411	38983.5703
	Cover Plate Bottom	44.0000	1.3750	60.5000	27.7292	29.7550	38955.8411	38983.5703
<b>Total</b>		<b>150.13</b>		<b>4673.55</b>	<b>7711.79</b>		<b>101876.41</b>	<b>109588.20</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	31.1300 in	S <sub>top</sub> =	3520.34 in <sup>3</sup>	y-bar =	31.1300 in	S <sub>top</sub> =	3520.34 in <sup>3</sup>
I <sub>x</sub> =	109588.20 in <sup>4</sup>	S <sub>bott.</sub> =	3520.34 in <sup>3</sup>	I <sub>x</sub> =	109588.20 in <sup>4</sup>	S <sub>bott.</sub> =	3520.34 in <sup>3</sup>
C <sub>top</sub> =	31.1300 in	A =	150.1300 in <sup>2</sup>	C <sub>top</sub> =	31.1300 in	A =	150.1300 in <sup>2</sup>
C <sub>bottom</sub> =	31.1300 in	r <sub>x</sub> =	27.0177 in	C <sub>bottom</sub> =	31.1300 in	r <sub>x</sub> =	27.0177 in
J =	230.5265	Z =	3919.0710 in <sup>3</sup>	Z =	3919.0710 in <sup>3</sup>		



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Date 3/22/2012  
 Date 4/2/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	28.3800	8.0000	227.0400	0.5913	0.0000	0.0000	0.5913	
4	Top Cover Plate	44.0000	8.0000	352.0000	1877.3333	0.0000	0.0000	1877.3333	
4	Bottom Cover Plate	44.0000	8.0000	352.0000	1877.3333	0.0000	0.0000	1877.3333	
<b>Total</b>		<b>150.13</b>		<b>1201.04</b>	<b>3810.00</b>		<b>196.28</b>	<b>4006.27</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	500.78	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	500.78	in <sup>3</sup>
I <sub>y</sub> =	4006.27	in <sup>4</sup>	S <sub>left</sub> =	500.78	in <sup>3</sup>	I <sub>y</sub> =	4006.27	in <sup>4</sup>	S <sub>left</sub> =	500.78	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	150.1300	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	150.1300	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	5.1658	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	5.1658	in

Non-composite Capacities*		
	AB	AI
M	10777.45 k-ft	10777.45 k-ft
V	543.19 k	543.19 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/22/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 54.7200$  in

$d_o = 52.0000$  in

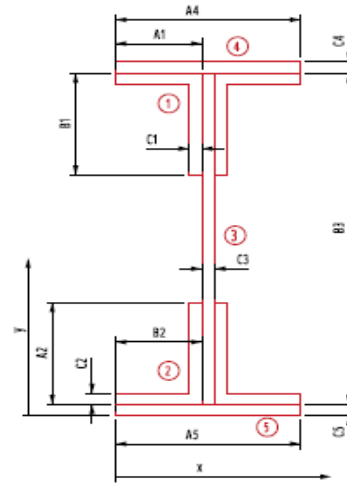
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 2.7500$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 2.7500$  in  
 $A_5 = 16.0000$  in



**Girder 32-33 Section 5**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	57.0950	513.8550	0.4219	26.9850	6553.7120	6554.1339
	Vertical Leg	7.8750	54.0950	425.9981	18.0879	23.9850	4530.3318	4548.4197
2	Horizontal Leg	9.0000	3.1250	28.1250	0.4219	26.9850	6553.7120	6554.1339
	Vertical Leg	7.8750	6.1250	48.2344	18.0879	23.9850	4530.3318	4548.4197
3	Web Plate	27.3600	30.1100	823.8096	6826.9548	0.0000	0.0000	6826.9548
4	Cover Plate Top	44.0000	58.8450	2589.1800	27.7292	28.7350	36330.8099	36358.5391
	Cover Plate Bottom	44.0000	1.3750	60.5000	27.7292	28.7350	36330.8099	36358.5391
<b>Total</b>		<b>149.11</b>		<b>4489.70</b>	<b>6919.43</b>		<b>94829.71</b>	<b>101749.14</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	30.1100 in	S <sub>top</sub> =	3379.25 in <sup>3</sup>	y-bar =	30.1100 in	S <sub>top</sub> =	3379.25 in <sup>3</sup>
I <sub>x</sub> =	101749.14 in <sup>4</sup>	S <sub>bottom</sub> =	3379.25 in <sup>3</sup>	I <sub>x</sub> =	101749.14 in <sup>4</sup>	S <sub>bottom</sub> =	3379.25 in <sup>3</sup>
C <sub>top</sub> =	30.1100 in	A =	149.1100 in <sup>2</sup>	C <sub>top</sub> =	30.1100 in	A =	149.1100 in <sup>2</sup>
C <sub>bottom</sub> =	30.1100 in	r <sub>x</sub> =	26.1223 in	C <sub>bottom</sub> =	30.1100 in	r <sub>x</sub> =	26.1223 in
J =	230.4415	Z =	3766.4586 in <sup>3</sup>	Z =	3766.4586		in <sup>3</sup>



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Date 3/22/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
3	Web Plate	27.3600	8.0000	218.8800	0.5700	0.0000	0.0000	0.5700
4	Top Cover Plate	44.0000	8.0000	352.0000	1877.3333	0.0000	0.0000	1877.3333
4	Bottom Cover Plate	44.0000	8.0000	352.0000	1877.3333	0.0000	0.0000	1877.3333
<b>Total</b>		<b>149.11</b>		<b>1192.88</b>	<b>3809.97</b>		<b>196.28</b>	<b>4006.25</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	500.78	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	500.78	in <sup>3</sup>
I <sub>y</sub> =	4006.25	in <sup>4</sup>	S <sub>left</sub> =	500.78	in <sup>3</sup>	I <sub>y</sub> =	4006.25	in <sup>4</sup>	S <sub>left</sub> =	500.78	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	149.1100	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	149.1100	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	5.1834	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	5.1834	in

Non-composite Capacities*		
	AB	AI
M	10357.76 k-ft	10357.76 k-ft
V	523.67 k	523.67 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
------------------	-----------

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/22/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 56.1600$  in

$d_o = 52.8125$  in

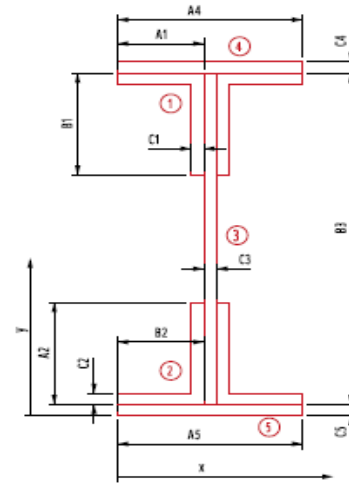
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 1.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 1.5000$  in  
 $A_5 = 16.0000$  in



**Girder 32-33 Section 6**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	57.2850	515.5650	0.4219	27.7050	6908.1032	6908.5251
	Vertical Leg	7.8750	54.2850	427.4944	18.0879	24.7050	4806.4041	4824.4920
2	Horizontal Leg	9.0000	1.8750	16.8750	0.4219	27.7050	6908.1032	6908.5251
	Vertical Leg	7.8750	4.8750	38.3906	18.0879	24.7050	4806.4041	4824.4920
3	Web Plate	28.0800	29.5800	830.6064	7380.2327	0.0000	0.0000	7380.2327
4	Cover Plate Top	24.0000	58.4100	1401.8400	4.5000	28.8300	19948.0536	19952.5536
	Cover Plate Bottom	24.0000	0.7500	18.0000	4.5000	28.8300	19948.0536	19952.5536
<b>Total</b>		<b>109.83</b>		<b>3248.77</b>	<b>7426.25</b>		<b>63325.12</b>	<b>70751.37</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	29.5800	in	S <sub>top</sub> =	2391.87	in <sup>3</sup>	y-bar =	29.5800	in	S <sub>top</sub> =	2391.87	in <sup>3</sup>
I <sub>x</sub> =	70751.37	n <sup>4</sup>	S <sub>bott.</sub> =	2391.87	in <sup>3</sup>	I <sub>x</sub> =	70751.37	in <sup>4</sup>	S <sub>bott.</sub> =	2391.87	in <sup>3</sup>
C <sub>top</sub> =	29.5800	in	A =	109.8300	in <sup>2</sup>	C <sub>top</sub> =	29.5800	in	A =	109.8300	in <sup>2</sup>
C <sub>bottom</sub> =	29.5800	in	r <sub>x</sub> =	25.3809	in	C <sub>bottom</sub> =	29.5800	in	r <sub>x</sub> =	25.3809	in
J =	44.6681		Z =	2665.8770	in <sup>3</sup>	Z =	2665.8770	in <sup>3</sup>			





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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	28.0800	8.0000	224.6400	0.5850	0.0000	0.0000	0.5850	
4	Top Cover Plate	24.0000	8.0000	192.0000	1024.0000	0.0000	0.0000	1024.0000	
4	Bottom Cover Plate	24.0000	8.0000	192.0000	1024.0000	0.0000	0.0000	1024.0000	
<b>Total</b>		<b>109.83</b>		<b>878.64</b>	<b>2103.32</b>		<b>196.28</b>	<b>2299.60</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	287.45	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	287.45	in <sup>3</sup>
I <sub>y</sub> =	2299.60	in <sup>4</sup>	S <sub>left</sub> =	287.45	in <sup>3</sup>	I <sub>y</sub> =	2299.60	in <sup>4</sup>	S <sub>left</sub> =	287.45	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	109.8300	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	109.8300	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.5758	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.5758	in

Non-composite Capacities*		
	AB	AI
M	7331.16 k-ft	7331.16 k-ft
V	537.45 k	537.45 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
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AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/22/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 59.8800$  in

$d_o = 54.0000$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.7500$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.7500$  in  
 $A_5 = 16.0000$  in



**Girder 32-33 Section 7**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	60.2550	542.2950	0.4219	29.5650	7866.8030	7867.2249
	Vertical Leg	7.8750	57.2550	450.8831	18.0879	26.5650	5557.3814	5575.4693
2	Horizontal Leg	9.0000	1.1250	10.1250	0.4219	29.5650	7866.8030	7867.2249
	Vertical Leg	7.8750	4.1250	32.4844	18.0879	26.5650	5557.3814	5575.4693
3	Web Plate	29.9400	30.6900	918.8586	8946.1079	0.0000	0.0000	8946.1079
4	Cover Plate Top	12.0000	61.0050	732.0600	0.5625	30.3150	11027.9907	11028.5532
	Cover Plate Bottom	12.0000	0.3750	4.5000	0.5625	30.3150	11027.9907	11028.5532
<b>Total</b>		<b>87.69</b>		<b>2691.21</b>	<b>8984.25</b>		<b>48904.35</b>	<b>57888.60</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	30.6900 in	S <sub>top</sub> =	1886.24 in <sup>3</sup>	y-bar =	30.6900 in	S <sub>top</sub> =	1886.24 in <sup>3</sup>
I <sub>x</sub> =	57888.60 in <sup>4</sup>	S <sub>bott.</sub> =	1886.24 in <sup>3</sup>	I <sub>x</sub> =	57888.60 in <sup>4</sup>	S <sub>bott.</sub> =	1886.24 in <sup>3</sup>
C <sub>top</sub> =	30.6900 in	A =	87.6900 in <sup>2</sup>	C <sub>top</sub> =	30.6900 in	A =	87.6900 in <sup>2</sup>
C <sub>bottom</sub> =	30.6900 in	r <sub>x</sub> =	25.6934 in	C <sub>bottom</sub> =	30.6900 in	r <sub>x</sub> =	25.6934 in
J =	13.3231	Z =	2126.3306 in <sup>3</sup>	Z =	2126.3306 in <sup>3</sup>		



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	29.9400	8.0000	239.5200	0.6238	0.0000	0.0000	0.6238	
4	Top Cover Plate	12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000	
4	Bottom Cover Plate	12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000	
<b>Total</b>		<b>87.69</b>		<b>701.52</b>	<b>1079.36</b>		<b>196.28</b>	<b>1275.64</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	159.45	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	159.45	in <sup>3</sup>
I <sub>y</sub> =	1275.64	in <sup>4</sup>	S <sub>left</sub> =	159.45	in <sup>3</sup>	I <sub>y</sub> =	1275.64	in <sup>4</sup>	S <sub>left</sub> =	159.45	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	87.6900	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	87.6900	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.8141	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.8141	in

Non-composite Capacities*		
	AB	AI
M	5847.41 k-ft	5847.41 k-ft
V	573.05 k	573.05 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/22/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 63.4800$  in

$d_o = 60.0000$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.7500$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.7500$  in  
 $A_5 = 16.0000$  in



**Girder 32-33 Section 8**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	63.8550	574.6950	0.4219	31.3650	8853.8690	8854.2909
	Vertical Leg	7.8750	60.8550	479.2331	18.0879	28.3650	6336.0141	6354.1020
2	Horizontal Leg	9.0000	1.1250	10.1250	0.4219	31.3650	8853.8690	8854.2909
	Vertical Leg	7.8750	4.1250	32.4844	18.0879	28.3650	6336.0141	6354.1020
3	Web Plate	31.7400	32.4900	1031.2326	10658.5840	0.0000	0.0000	10658.5840
4	Cover Plate Top	12.0000	64.6050	775.2600	0.5625	32.1150	12376.4787	12377.0412
	Cover Plate Bottom	12.0000	0.3750	4.5000	0.5625	32.1150	12376.4787	12377.0412
<b>Total</b>		<b>89.49</b>		<b>2907.53</b>	<b>10696.73</b>		<b>55132.72</b>	<b>65829.45</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	32.4900 in	S <sub>top</sub> =	2026.15 in <sup>3</sup>	y-bar =	32.4900 in	S <sub>top</sub> =	2026.15 in <sup>3</sup>
I <sub>x</sub> =	65829.45 in <sup>4</sup>	S <sub>bottom</sub> =	2026.15 in <sup>3</sup>	I <sub>x</sub> =	65829.45 in <sup>4</sup>	S <sub>bottom</sub> =	2026.15 in <sup>3</sup>
C <sub>top</sub> =	32.4900 in	A =	89.4900 in <sup>2</sup>	C <sub>top</sub> =	32.4900 in	A =	89.4900 in <sup>2</sup>
C <sub>bottom</sub> =	32.4900 in	r <sub>x</sub> =	27.1221 in	C <sub>bottom</sub> =	32.4900 in	r <sub>x</sub> =	27.1221 in
J =	13.4731	Z =	2285.7926 in <sup>3</sup>	Z =	2285.7926 in <sup>3</sup>		



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Date 3/22/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	31.7400	8.0000	253.9200	0.6613	0.0000	0.0000	0.6613	
4	Top Cover Plate	12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000	
4	Bottom Cover Plate	12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000	
<b>Total</b>		<b>89.49</b>		<b>715.92</b>	<b>1079.40</b>		<b>196.28</b>	<b>1275.68</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	159.46	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	159.46	in <sup>3</sup>
I <sub>y</sub> =	1275.68	in <sup>4</sup>	S <sub>left</sub> =	159.46	in <sup>3</sup>	I <sub>y</sub> =	1275.68	in <sup>4</sup>	S <sub>left</sub> =	159.46	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	89.4900	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	89.4900	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.7756	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.7756	in

Non-composite Capacities*		
	AB	AI
M	6285.93 k-ft	6285.93 k-ft
V	607.50 k	607.50 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/22/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 68.4000$  in

$d_o = 60.8125$  in

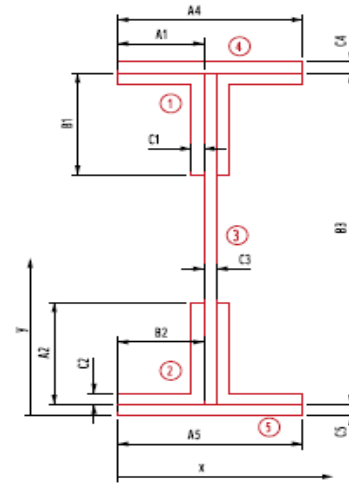
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 1.2500$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 1.2500$  in  
 $A_5 = 16.0000$  in



**Girder 32-33 Section 9**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	69.2750	623.4750	0.4219	33.8250	10297.1756	10297.5975
	Vertical Leg	7.8750	66.2750	521.9156	18.0879	30.8250	7482.6724	7500.7603
2	Horizontal Leg	9.0000	1.6250	14.6250	0.4219	33.8250	10297.1756	10297.5975
	Vertical Leg	7.8750	4.6250	36.4219	18.0879	30.8250	7482.6724	7500.7603
3	Web Plate	34.2000	35.4500	1212.3900	13333.8960	0.0000	0.0000	13333.8960
4	Cover Plate Top	20.0000	70.2750	1405.5000	2.6042	34.8250	24255.6125	24258.2167
	Cover Plate Bottom	20.0000	0.6250	12.5000	2.6042	34.8250	24255.6125	24258.2167
<b>Total</b>		<b>107.95</b>		<b>3826.83</b>	<b>13376.12</b>		<b>84070.92</b>	<b>97447.04</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	35.4500 in	S <sub>top</sub> =	2748.86 in <sup>3</sup>	y-bar =	35.4500 in	S <sub>top</sub> =	2748.86 in <sup>3</sup>
I <sub>x</sub> =	97447.04 in <sup>4</sup>	S <sub>bott.</sub> =	2748.86 in <sup>3</sup>	I <sub>x</sub> =	97447.04 in <sup>4</sup>	S <sub>bott.</sub> =	2748.86 in <sup>3</sup>
C <sub>top</sub> =	35.4500 in	A =	107.9500 in <sup>2</sup>	C <sub>top</sub> =	35.4500 in	A =	107.9500 in <sup>2</sup>
C <sub>bottom</sub> =	35.4500 in	r <sub>x</sub> =	30.0451 in	C <sub>bottom</sub> =	35.4500 in	r <sub>x</sub> =	30.0451 in
J =	30.0115	Z =	3072.1638 in <sup>3</sup>	Z =	3072.1638 in <sup>3</sup>		



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Date 3/22/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	34.2000	8.0000	273.6000	0.7125	0.0000	0.0000	0.7125	
4	Top Cover Plate	20.0000	8.0000	160.0000	853.3333	0.0000	0.0000	853.3333	
4	Bottom Cover Plate	20.0000	8.0000	160.0000	853.3333	0.0000	0.0000	853.3333	
<b>Total</b>		<b>107.95</b>		<b>863.60</b>	<b>1762.12</b>		<b>196.28</b>	<b>1958.39</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	244.80	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	244.80	in <sup>3</sup>
I <sub>y</sub> =	1958.39	in <sup>4</sup>	S <sub>left</sub> =	244.80	in <sup>3</sup>	I <sub>y</sub> =	1958.39	in <sup>4</sup>	S <sub>left</sub> =	244.80	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	107.9500	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	107.9500	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.2593	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.2593	in

Non-composite Capacities*		
	AB	AI
M	7559.36 k-ft	7559.36 k-ft
V	645.03 k	645.03 k

\*Noncompact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



Made By CTG  
Checked By DMP

Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 67.6800$  in

$d_o = 62.0600$  in

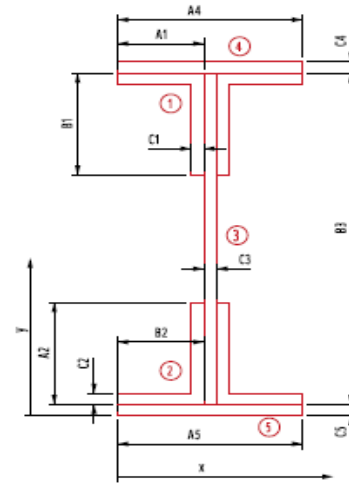
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 1.2500$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 1.2500$  in  
 $A_5 = 16.0000$  in



**Girder 33-34 Section 1**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	68.5550	616.9950	0.4219	33.4650	10079.1560	10079.5779
	Vertical Leg	7.8750	65.5550	516.2456	18.0879	30.4650	7308.9153	7327.0032
2	Horizontal Leg	9.0000	1.6250	14.6250	0.4219	33.4650	10079.1560	10079.5779
	Vertical Leg	7.8750	4.6250	36.4219	18.0879	30.4650	7308.9153	7327.0032
3	Web Plate	33.8400	35.0900	1187.4456	12917.2424	0.0000	0.0000	12917.2424
4	Cover Plate Top	20.0000	69.5550	1391.1000	2.6042	34.4650	23756.7245	23759.3287
	Cover Plate Bottom	20.0000	0.6250	12.5000	2.6042	34.4650	23756.7245	23759.3287
<b>Total</b>		<b>107.59</b>		<b>3775.33</b>	<b>12959.47</b>		<b>82289.59</b>	<b>95249.06</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	35.0900 in	S <sub>top</sub> =	2714.42 in <sup>3</sup>	y-bar =	35.0900 in	S <sub>top</sub> =	2714.42 in <sup>3</sup>
I <sub>x</sub> =	95249.06 in <sup>4</sup>	S <sub>bott.</sub> =	2714.42 in <sup>3</sup>	I <sub>x</sub> =	95249.06 in <sup>4</sup>	S <sub>bott.</sub> =	2714.42 in <sup>3</sup>
C <sub>top</sub> =	35.0900 in	A =	107.5900 in <sup>2</sup>	C <sub>top</sub> =	35.0900 in	A =	107.5900 in <sup>2</sup>
C <sub>bottom</sub> =	35.0900 in	r <sub>x</sub> =	29.7539 in	C <sub>bottom</sub> =	35.0900 in	r <sub>x</sub> =	29.7539 in
J =	29.9815	Z =	3033.3666 in <sup>3</sup>	Z =	3033.3666		in <sup>3</sup>





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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	33.8400	8.0000	270.7200	0.7050	0.0000	0.0000	0.7050	
4	Top Cover Plate	20.0000	8.0000	160.0000	853.3333	0.0000	0.0000	853.3333	
4	Bottom Cover Plate	20.0000	8.0000	160.0000	853.3333	0.0000	0.0000	853.3333	
<b>Total</b>		<b>107.59</b>		<b>860.72</b>	<b>1762.11</b>		<b>196.28</b>	<b>1958.39</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	244.80	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	244.80	in <sup>3</sup>
I <sub>y</sub> =	1958.39	in <sup>4</sup>	S <sub>left</sub> =	244.80	in <sup>3</sup>	I <sub>y</sub> =	1958.39	in <sup>4</sup>	S <sub>left</sub> =	244.80	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	107.5900	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	107.5900	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.2664	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.2664	in

Non-composite Capacities*		
	AB	AI
M	7464.66 k-ft	7464.66 k-ft
V	635.59 k	635.59 k

\*Noncompact Section

F <sub>y</sub> =	33.00 ksi
------------------	-----------

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 63.2400$  in

$d_o = 60.0000$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.7500$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 1.2500$  in  
 $A_5 = 16.0000$  in



Girder 33-34 Section 2

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	64.1150	577.0350	0.4219	33.9251	10358.2033	10358.6252
	Vertical Leg	7.8750	61.1150	481.2806	18.0879	30.9251	7531.3426	7549.4305
2	Horizontal Leg	9.0000	1.6250	14.6250	0.4219	28.5649	7343.5887	7344.0105
	Vertical Leg	7.8750	4.6250	36.4219	18.0879	25.5649	5146.8229	5164.9108
3	Web Plate	31.6200	32.8700	1039.3494	10538.1492	2.6801	227.1221	10765.2713
4	Cover Plate Top	12.0000	64.8650	778.3800	0.5625	34.6751	14428.3393	14428.9018
	Cover Plate Bottom	20.0000	0.6250	12.5000	2.6042	29.5649	17481.6825	17484.2866
<b>Total</b>		<b>97.37</b>		<b>2939.59</b>	<b>10578.34</b>		<b>62517.10</b>	<b>73095.44</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	30.1899	in	S <sub>top</sub> =	2085.46	in <sup>3</sup>	y-bar =	30.1899
I <sub>x</sub> =	73095.44	n <sup>4</sup>	S <sub>bott.</sub> =	2421.19	in <sup>3</sup>	I <sub>x</sub> =	73095.44
C <sub>top</sub> =	35.0501	in	A =	97.3700	in <sup>2</sup>	C <sub>top</sub> =	35.0501
C <sub>bottom</sub> =	30.1899	in	r <sub>x</sub> =	27.3989	in	C <sub>bottom</sub> =	30.1899
J =	21.6298		Z =	2504.0210	in <sup>3</sup>	Z =	2504.0210



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	31.6200	8.0000	252.9600	0.6588	0.0000	0.0000	0.6588	
4	Top Cover Plate	12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000	
4	Bottom Cover Plate	20.0000	8.0000	160.0000	853.3333	0.0000	0.0000	853.3333	
<b>Total</b>		<b>97.37</b>		<b>778.96</b>	<b>1420.73</b>		<b>196.28</b>	<b>1617.01</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	202.13	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	202.13	in <sup>3</sup>
I <sub>y</sub> =	1617.01	in <sup>4</sup>	S <sub>left</sub> =	202.13	in <sup>3</sup>	I <sub>y</sub> =	1617.01	in <sup>4</sup>	S <sub>left</sub> =	202.13	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	97.3700	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	97.3700	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.0751	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.0751	in

Non-composite Capacities*		
	AB	AI
M	6886.06 k-ft	6886.06 k-ft
V	605.21 k	605.21 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 59.2800$  in

$d_o = 60.0000$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.7500$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.7500$  in  
 $A_5 = 16.0000$  in



**Girder 33-34 Section 3**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg		9.0000	59.6550	536.8950	0.4219	29.2650	7707.9620	7708.3839
	Vertical Leg		7.8750	56.6550	446.1581	18.0879	26.2650	5432.5705	5450.6584
2	Horizontal Leg		9.0000	1.1250	10.1250	0.4219	29.2650	7707.9620	7708.3839
	Vertical Leg		7.8750	4.1250	32.4844	18.0879	26.2650	5432.5705	5450.6584
3	Web Plate		29.6400	30.3900	900.7596	8679.8724	0.0000	0.0000	8679.8724
4	Cover Plate Top		12.0000	60.4050	724.8600	0.5625	30.0150	10810.8027	10811.3652
	Cover Plate Bottom		12.0000	0.3750	4.5000	0.5625	30.0150	10810.8027	10811.3652
<b>Total</b>			<b>87.39</b>		<b>2655.78</b>	<b>8718.02</b>		<b>47902.67</b>	<b>56620.69</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	30.3900	in	$S_{top} = 1863.14$	in <sup>3</sup>	y-bar =	30.3900	in	$S_{top} = 1863.14$	in <sup>3</sup>		
$I_x =$	56620.69	in <sup>4</sup>	$S_{bott.} = 1863.14$	in <sup>3</sup>	$I_x =$	56620.69	in <sup>4</sup>	$S_{bott.} = 1863.14$	in <sup>3</sup>		
$C_{top} =$	30.3900	in	A =	87.3900	in <sup>2</sup>	$C_{top} =$	30.3900	in	A =	87.3900	in <sup>2</sup>
$C_{bottom} =$	30.3900	in	$r_x =$	25.4540	in	$C_{bottom} =$	30.3900	in	$r_x =$	25.4540	in
J =	13.2981		Z =	2100.0686	in <sup>3</sup>				Z =	2100.0686	in <sup>3</sup>



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Date 3/23/2012  
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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	29.6400	8.0000	237.1200	0.6175	0.0000	0.0000	0.6175	
4	Top Cover Plate	12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000	
4	Bottom Cover Plate	12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000	
<b>Total</b>		<b>87.39</b>		<b>699.12</b>	<b>1079.36</b>		<b>196.28</b>	<b>1275.63</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	159.45	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	159.45	in <sup>3</sup>
I <sub>y</sub> =	1275.63	in <sup>4</sup>	S <sub>left</sub> =	159.45	in <sup>3</sup>	I <sub>y</sub> =	1275.63	in <sup>4</sup>	S <sub>left</sub> =	159.45	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	87.3900	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	87.3900	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.8206	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.8206	in

Non-composite Capacities*		
	AB	AI
M	5775.19 k-ft	5775.19 k-ft
V	567.31 k	567.31 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

**Top Angles:**

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

**Bottom Angles:**

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

**Web Plate:**

$C_3 = 0.5000$  in  
 $*B_3 = 55.6800$  in

$d_o = 54.0000$  in

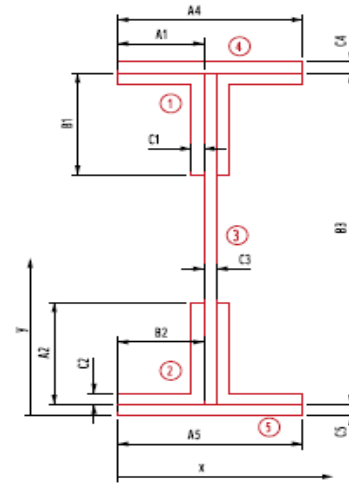
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

**Top Cover Plate:**

$C_4 = 0.7500$  in  
 $A_4 = 16.0000$  in

**Btm Cover Plate:**

$C_5 = 0.7500$  in  
 $A_5 = 16.0000$  in



**Girder 33-34 Section 4**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	56.0550	504.4950	0.4219	27.4650	6788.9360	6789.3579
	Vertical Leg	7.8750	53.0550	417.8081	18.0879	24.4650	4713.4728	4731.5607
2	Horizontal Leg	9.0000	1.1250	10.1250	0.4219	27.4650	6788.9360	6789.3579
	Vertical Leg	7.8750	4.1250	32.4844	18.0879	24.4650	4713.4728	4731.5607
3	Web Plate	27.8400	28.5900	795.9456	7192.6088	0.0000	0.0000	7192.6088
4	Cover Plate Top	12.0000	56.8050	681.6600	0.5625	28.2150	9553.0347	9553.5972
	Cover Plate Bottom	12.0000	0.3750	4.5000	0.5625	28.2150	9553.0347	9553.5972
<b>Total</b>		<b>85.59</b>		<b>2447.02</b>	<b>7230.75</b>		<b>42110.89</b>	<b>49341.64</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	28.5900 in	S <sub>top</sub> =	1725.84 in <sup>3</sup>	y-bar =	28.5900 in	S <sub>top</sub> =	1725.84 in <sup>3</sup>
I <sub>x</sub> =	49341.64 in <sup>4</sup>	S <sub>bottom</sub> =	1725.84 in <sup>3</sup>	I <sub>x</sub> =	49341.64 in <sup>4</sup>	S <sub>bottom</sub> =	1725.84 in <sup>3</sup>
C <sub>top</sub> =	28.5900 in	A =	85.5900 in <sup>2</sup>	C <sub>top</sub> =	28.5900 in	A =	85.5900 in <sup>2</sup>
C <sub>bottom</sub> =	28.5900 in	r <sub>x</sub> =	24.0102 in	C <sub>bottom</sub> =	28.5900 in	r <sub>x</sub> =	24.0102 in
J =	13.1481	Z =	1944.3866 in <sup>3</sup>	Z =	1944.3866 in <sup>3</sup>		



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	27.8400	8.0000	222.7200	0.5800	0.0000	0.0000	0.5800	
4	Top Cover Plate	12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000	
4	Bottom Cover Plate	12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000	
<b>Total</b>		<b>85.59</b>		<b>684.72</b>	<b>1079.32</b>		<b>196.28</b>	<b>1275.60</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	159.45	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	159.45	in <sup>3</sup>
I <sub>y</sub> =	1275.60	in <sup>4</sup>	S <sub>left</sub> =	159.45	in <sup>3</sup>	I <sub>y</sub> =	1275.60	in <sup>4</sup>	S <sub>left</sub> =	159.45	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	85.5900	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	85.5900	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.8605	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.8605	in

Non-composite Capacities*		
	AB	AI
M	5347.06 k-ft	5347.06 k-ft
V	532.86 k	532.86 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

**Top Angles:**

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

**Bottom Angles:**

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

**Web Plate:**

$C_3 = 0.5000$  in  
 $*B_3 = 60.3600$  in

$d_o = 60.0000$  in

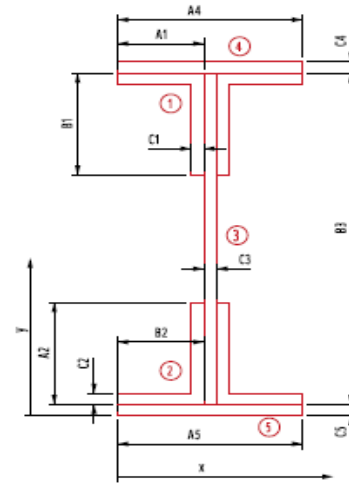
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

**Top Cover Plate:**

$C_4 = 0.7500$  in  
 $A_4 = 16.0000$  in

**Btm Cover Plate:**

$C_5 = 0.7500$  in  
 $A_5 = 16.0000$  in



**Girder 33-34 Section 5**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	60.7350	546.6150	0.4219	29.8050	7995.0422	7995.4641
	Vertical Leg	7.8750	57.7350	454.6631	18.0879	26.8050	5658.2507	5676.3386
2	Horizontal Leg	9.0000	1.1250	10.1250	0.4219	29.8050	7995.0422	7995.4641
	Vertical Leg	7.8750	4.1250	32.4844	18.0879	26.8050	5658.2507	5676.3386
3	Web Plate	30.1800	30.9300	933.4674	9162.9739	0.0000	0.0000	9162.9739
4	Cover Plate Top	12.0000	61.4850	737.8200	0.5625	30.5550	11203.2963	11203.8588
	Cover Plate Bottom	12.0000	0.3750	4.5000	0.5625	30.5550	11203.2963	11203.8588
<b>Total</b>		<b>87.93</b>		<b>2719.67</b>	<b>9201.12</b>		<b>49713.18</b>	<b>58914.30</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	30.9300 in	S <sub>top</sub> =	1904.76 in <sup>3</sup>	y-bar =	30.9300 in	S <sub>top</sub> =	1904.76 in <sup>3</sup>
I <sub>x</sub> =	58914.30 in <sup>4</sup>	S <sub>bottom</sub> =	1904.76 in <sup>3</sup>	I <sub>x</sub> =	58914.30 in <sup>4</sup>	S <sub>bottom</sub> =	1904.76 in <sup>3</sup>
C <sub>top</sub> =	30.9300 in	A =	87.9300 in <sup>2</sup>	C <sub>top</sub> =	30.9300 in	A =	87.9300 in <sup>2</sup>
C <sub>bottom</sub> =	30.9300 in	r <sub>x</sub> =	25.8846 in	C <sub>bottom</sub> =	30.9300 in	r <sub>x</sub> =	25.8846 in
J =	13.3431	Z =	2147.4050 in <sup>3</sup>	Z =	2147.4050 in <sup>3</sup>		





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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
3	Web Plate	30.1800	8.0000	241.4400	0.6288	0.0000	0.0000	0.6288
4	Top Cover Plate	12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000
4	Bottom Cover Plate	12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000
<b>Total</b>		<b>87.93</b>		<b>703.44</b>	<b>1079.37</b>		<b>196.28</b>	<b>1275.64</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	159.46	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	159.46	in <sup>3</sup>
I <sub>y</sub> =	1275.64	in <sup>4</sup>	S <sub>left</sub> =	159.46	in <sup>3</sup>	I <sub>y</sub> =	1275.64	in <sup>4</sup>	S <sub>left</sub> =	159.46	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	87.9300	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	87.9300	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.8089	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.8089	in

Non-composite Capacities*		
	AB	AI
M	5905.36 k-ft	5905.36 k-ft
V	577.65 k	577.65 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
------------------	-----------

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 67.6800$  in

$d_o = 60.4400$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.7500$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.7500$  in  
 $A_5 = 16.0000$  in



**Girder 33-34 Section 5**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	68.0550	612.4950	0.4219	33.4650	10079.1560	10079.5779
	Vertical Leg	7.8750	65.0550	512.3081	18.0879	30.4650	7308.9153	7327.0032
2	Horizontal Leg	9.0000	1.1250	10.1250	0.4219	33.4650	10079.1560	10079.5779
	Vertical Leg	7.8750	4.1250	32.4844	18.0879	30.4650	7308.9153	7327.0032
3	Web Plate	33.8400	34.5900	1170.5256	12917.2424	0.0000	0.0000	12917.2424
4	Cover Plate Top	12.0000	68.8050	825.6600	0.5625	34.2150	14047.9947	14048.5572
	Cover Plate Bottom	12.0000	0.3750	4.5000	0.5625	34.2150	14047.9947	14048.5572
<b>Total</b>		<b>91.59</b>		<b>3168.10</b>	<b>12955.39</b>		<b>62872.13</b>	<b>75827.52</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	34.5900 in	S <sub>top</sub> =	2192.18 in <sup>3</sup>	y-bar =	34.5900 in	S <sub>top</sub> =	2192.18 in <sup>3</sup>
I <sub>x</sub> =	75827.52 in <sup>4</sup>	S <sub>bott.</sub> =	2192.18 in <sup>3</sup>	I <sub>x</sub> =	75827.52 in <sup>4</sup>	S <sub>bott.</sub> =	2192.18 in <sup>3</sup>
C <sub>top</sub> =	34.5900 in	A =	91.5900 in <sup>2</sup>	C <sub>top</sub> =	34.5900 in	A =	91.5900 in <sup>2</sup>
C <sub>bottom</sub> =	34.5900 in	r <sub>x</sub> =	28.7733 in	C <sub>bottom</sub> =	34.5900 in	r <sub>x</sub> =	28.7733 in
J =	13.6481	Z =	2475.9266 in <sup>3</sup>			Z =	2475.9266 in <sup>3</sup>



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Checked By DMP

Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	33.8400	8.0000	270.7200	0.7050	0.0000	0.0000	0.7050	
4	Top Cover Plate	12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000	
4	Bottom Cover Plate	12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000	
<b>Total</b>		<b>91.59</b>		<b>732.72</b>	<b>1079.44</b>		<b>196.28</b>	<b>1275.72</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	159.47	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	159.47	in <sup>3</sup>
I <sub>y</sub> =	1275.72	in <sup>4</sup>	S <sub>left</sub> =	159.47	in <sup>3</sup>	I <sub>y</sub> =	1275.72	in <sup>4</sup>	S <sub>left</sub> =	159.47	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	91.5900	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	91.5900	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.7321	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.7321	in

Non-composite Capacities*		
	AB	AI
M	6028.50 k-ft	6028.50 k-ft
V	644.90 k	644.90 k

\*Noncompact Section

F <sub>y</sub> =	33.00 ksi
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AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/26/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.6250$  in  
 $*B_3 = 66.9600$  in

$d_o = 62.0000$  in

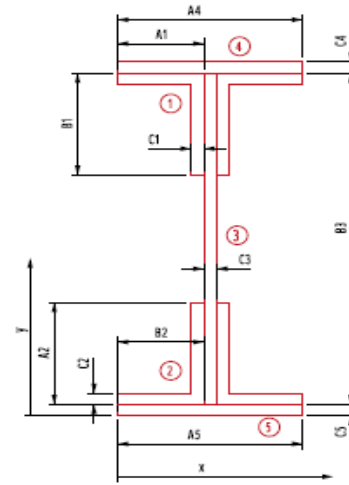
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.7500$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.7500$  in  
 $A_5 = 16.0000$  in



**Girder 34-35 Section 1**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	67.3350	606.0150	0.4219	33.1050	9863.4692	9863.8911
	Vertical Leg	7.8750	64.3350	506.6381	18.0879	30.1050	7137.1993	7155.2872
2	Horizontal Leg	9.0000	1.1250	10.1250	0.4219	33.1050	9863.4692	9863.8911
	Vertical Leg	7.8750	4.1250	32.4844	18.0879	30.1050	7137.1993	7155.2872
3	Web Plate	41.8500	34.2300	1432.5255	15636.7001	0.0000	0.0000	15636.7001
4	Cover Plate Top	12.0000	68.0850	817.0200	0.5625	33.8550	13753.9323	13754.4948
	Cover Plate Bottom	12.0000	0.3750	4.5000	0.5625	33.8550	13753.9323	13754.4948
<b>Total</b>		<b>99.60</b>		<b>3409.31</b>	<b>15674.84</b>		<b>61509.20</b>	<b>77184.05</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	34.2300 in	S <sub>top</sub> =	2254.87 in <sup>3</sup>	y-bar =	34.2300 in	S <sub>top</sub> =	2254.87 in <sup>3</sup>
I <sub>x</sub> =	77184.05 in <sup>4</sup>	S <sub>bott.</sub> =	2254.87 in <sup>3</sup>	I <sub>x</sub> =	77184.05 in <sup>4</sup>	S <sub>bott.</sub> =	2254.87 in <sup>3</sup>
C <sub>top</sub> =	34.2300 in	A =	99.6000 in <sup>2</sup>	C <sub>top</sub> =	34.2300 in	A =	99.6000 in <sup>2</sup>
C <sub>bottom</sub> =	34.2300 in	r <sub>x</sub> =	27.8377 in	C <sub>bottom</sub> =	34.2300 in	r <sub>x</sub> =	27.8377 in
J =	16.2773	Z =	2583.1328 in <sup>3</sup>			Z =	2583.1328 in <sup>3</sup>



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Date 3/26/2012  
 Date 4/2/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
3	Web Plate	41.8500	8.0000	334.8000	1.3623	0.0000	0.0000	1.3623	
4	Top Cover Plate	12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000	
4	Bottom Cover Plate	12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000	
<b>Total</b>		<b>99.60</b>		<b>796.80</b>	<b>1080.10</b>		<b>204.95</b>	<b>1285.05</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	160.63	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	160.63	in <sup>3</sup>
I <sub>y</sub> =	1285.05	in <sup>4</sup>	S <sub>left</sub> =	160.63	in <sup>3</sup>	I <sub>y</sub> =	1285.05	in <sup>4</sup>	S <sub>left</sub> =	160.63	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	99.6000	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	99.6000	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5920	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5920	in

Non-composite Capacities*		
	AB	AI
M	7103.62 k-ft	7103.62 k-ft
V	801.01 k	801.01 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/26/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.6250$  in  
 $*B_3 = 61.9200$  in

$d_o = 63.0000$  in

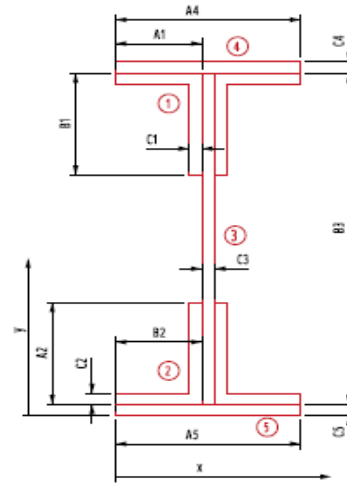
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.7500$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.7500$  in  
 $A_5 = 16.0000$  in



Girder 34-35 Section 2

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	62.2950	560.6550	0.4219	30.5850	8418.9800	8419.4019
	Vertical Leg	7.8750	59.2950	466.9481	18.0879	27.5850	5992.3413	6010.4292
2	Horizontal Leg	9.0000	1.1250	10.1250	0.4219	30.5850	8418.9800	8419.4019
	Vertical Leg	7.8750	4.1250	32.4844	18.0879	27.5850	5992.3413	6010.4292
3	Web Plate	38.7000	31.7100	1227.1770	12364.9286	0.0000	0.0000	12364.9286
4	Cover Plate Top	12.0000	63.0450	756.5400	0.5625	31.3350	11782.5867	11783.1492
	Cover Plate Bottom	12.0000	0.3750	4.5000	0.5625	31.3350	11782.5867	11783.1492
<b>Total</b>		<b>96.45</b>		<b>3058.43</b>	<b>12403.07</b>		<b>52387.82</b>	<b>64790.89</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	31.7100 in	S <sub>top</sub> =	2043.23 in <sup>3</sup>	y-bar =	31.7100 in	S <sub>top</sub> =	2043.23 in <sup>3</sup>
I <sub>x</sub> =	64790.89 in <sup>4</sup>	S <sub>bott.</sub> =	2043.23 in <sup>3</sup>	I <sub>x</sub> =	64790.89 in <sup>4</sup>	S <sub>bott.</sub> =	2043.23 in <sup>3</sup>
C <sub>top</sub> =	31.7100 in	A =	96.4500 in <sup>2</sup>	C <sub>top</sub> =	31.7100 in	A =	96.4500 in <sup>2</sup>
C <sub>bottom</sub> =	31.7100 in	r <sub>x</sub> =	25.9183 in	C <sub>bottom</sub> =	31.7100 in	r <sub>x</sub> =	25.9183 in
J =	15.8672	Z =	2336.1098 in <sup>3</sup>	Z =	2336.1098		in <sup>3</sup>



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Date 3/26/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
3	Web Plate	38.7000	8.0000	309.6000	1.2598	0.0000	0.0000	1.2598	
4	Top Cover Plate	12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000	
4	Bottom Cover Plate	12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000	
<b>Total</b>		<b>96.45</b>		<b>771.60</b>	<b>1080.00</b>		<b>204.95</b>	<b>1284.95</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	160.62	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	160.62	in <sup>3</sup>
I <sub>y</sub> =	1284.95	in <sup>4</sup>	S <sub>left</sub> =	160.62	in <sup>3</sup>	I <sub>y</sub> =	1284.95	in <sup>4</sup>	S <sub>left</sub> =	160.62	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	96.4500	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	96.4500	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.6500	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.6500	in

Non-composite Capacities*		
	AB	AI
M	6424.30 k-ft	6424.30 k-ft
V	740.72 k	740.72 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/26/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.6250$  in  
 $*B_3 = 64.4400$  in

$d_o = 63.0000$  in

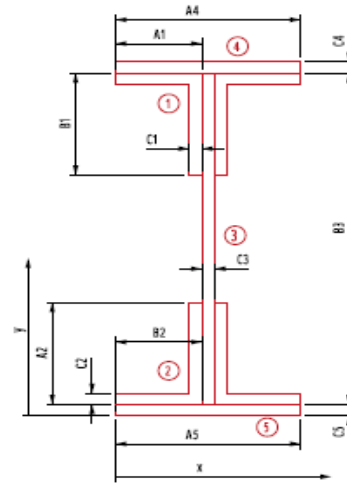
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.7500$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.7500$  in  
 $A_5 = 16.0000$  in



Girder 34-35 Section 3

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	64.8150	583.3350	0.4219	31.8450	9126.9362	9127.3581
	Vertical Leg	7.8750	61.8150	486.7931	18.0879	28.8450	6552.2679	6570.3558
2	Horizontal Leg	9.0000	1.1250	10.1250	0.4219	31.8450	9126.9362	9127.3581
	Vertical Leg	7.8750	4.1250	32.4844	18.0879	28.8450	6552.2679	6570.3558
3	Web Plate	40.2750	32.9700	1327.8668	13936.8738	0.0000	0.0000	13936.8738
4	Cover Plate Top	12.0000	65.5650	786.7800	0.5625	32.5950	12749.2083	12749.7708
	Cover Plate Bottom	12.0000	0.3750	4.5000	0.5625	32.5950	12749.2083	12749.7708
<b>Total</b>		<b>98.03</b>		<b>3231.88</b>	<b>13975.02</b>		<b>56856.82</b>	<b>70831.84</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	32.9700 in	S <sub>top</sub> =	2148.37 in <sup>3</sup>	y-bar =	32.9700 in	S <sub>top</sub> =	2148.37 in <sup>3</sup>
I <sub>x</sub> =	70831.84 in <sup>4</sup>	S <sub>bottom</sub> =	2148.37 in <sup>3</sup>	I <sub>x</sub> =	70831.84 in <sup>4</sup>	S <sub>bottom</sub> =	2148.37 in <sup>3</sup>
C <sub>top</sub> =	32.9700 in	A =	98.0250 in <sup>2</sup>	C <sub>top</sub> =	32.9700 in	A =	98.0250 in <sup>2</sup>
C <sub>bottom</sub> =	32.9700 in	r <sub>x</sub> =	26.8810 in	C <sub>bottom</sub> =	32.9700 in	r <sub>x</sub> =	26.8810 in
J =	16.0723	Z =	2458.6290 in <sup>3</sup>			Z =	2458.6290 in <sup>3</sup>





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Date 3/26/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
3	Web Plate	40.2750	8.0000	322.2000	1.3110	0.0000	0.0000	1.3110	
4	Top Cover Plate	12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000	
4	Bottom Cover Plate	12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000	
<b>Total</b>		<b>98.03</b>		<b>784.20</b>	<b>1080.05</b>		<b>204.95</b>	<b>1285.00</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	160.63	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	160.63	in <sup>3</sup>
I <sub>y</sub> =	1285.00	in <sup>4</sup>	S <sub>left</sub> =	160.63	in <sup>3</sup>	I <sub>y</sub> =	1285.00	in <sup>4</sup>	S <sub>left</sub> =	160.63	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	98.0250	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	98.0250	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.6206	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.6206	in

Non-composite Capacities*		
	AB	AI
M	6761.23 k-ft	6761.23 k-ft
V	770.86 k	770.86 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/26/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.6250$  in  
 $*B_3 = 67.3200$  in

$d_o = 63.0000$  in

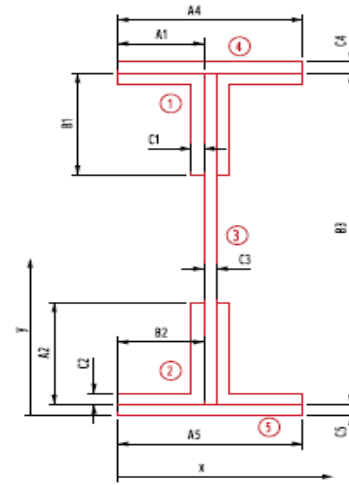
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 1.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 1.5000$  in  
 $A_5 = 16.0000$  in



Girder 34-35 Section 4

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	68.4450	616.0050	0.4219	33.2850	9971.0210	9971.4429
	Vertical Leg	7.8750	65.4450	515.3794	18.0879	30.2850	7222.8021	7240.8900
2	Horizontal Leg	9.0000	1.8750	16.8750	0.4219	33.2850	9971.0210	9971.4429
	Vertical Leg	7.8750	4.8750	38.3906	18.0879	30.2850	7222.8021	7240.8900
3	Web Plate	42.0750	35.1600	1479.3570	15890.2633	0.0000	0.0000	15890.2633
4	Cover Plate Top	24.0000	69.5700	1669.6800	4.5000	34.4100	28417.1544	28421.6544
	Cover Plate Bottom	24.0000	0.7500	18.0000	4.5000	34.4100	28417.1544	28421.6544
<b>Total</b>		<b>123.83</b>		<b>4353.69</b>	<b>15936.28</b>		<b>91221.96</b>	<b>107158.24</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	35.1600 in	S <sub>top</sub> =	3047.73 in <sup>3</sup>	y-bar =	35.1600 in	S <sub>top</sub> =	3047.73 in <sup>3</sup>
I <sub>x</sub> =	107158.24 in <sup>4</sup>	S <sub>bottom</sub> =	3047.73 in <sup>3</sup>	I <sub>x</sub> =	107158.24 in <sup>4</sup>	S <sub>bottom</sub> =	3047.73 in <sup>3</sup>
C <sub>top</sub> =	35.1600 in	A =	123.8250 in <sup>2</sup>	C <sub>top</sub> =	35.1600 in	A =	123.8250 in <sup>2</sup>
C <sub>bottom</sub> =	35.1600 in	r <sub>x</sub> =	29.4177 in	C <sub>bottom</sub> =	35.1600 in	r <sub>x</sub> =	29.4177 in
J =	47.8066	Z =	3435.9210 in <sup>3</sup>	Z =	3435.9210		in <sup>3</sup>



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Date 3/26/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
3	Web Plate	42.0750	8.0000	336.6000	1.3696	0.0000	0.0000	1.3696	
4	Top Cover Plate	24.0000	8.0000	192.0000	1024.0000	0.0000	0.0000	1024.0000	
4	Bottom Cover Plate	24.0000	8.0000	192.0000	1024.0000	0.0000	0.0000	1024.0000	
<b>Total</b>		<b>123.83</b>		<b>990.60</b>	<b>2104.11</b>		<b>204.95</b>	<b>2309.06</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	288.63	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	288.63	in <sup>3</sup>
I <sub>y</sub> =	2309.06	in <sup>4</sup>	S <sub>left</sub> =	288.63	in <sup>3</sup>	I <sub>y</sub> =	2309.06	in <sup>4</sup>	S <sub>left</sub> =	288.63	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	123.8250	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	123.8250	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.3183	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.3183	in

Non-composite Capacities*		
	AB	AI
M	9448.78 k-ft	9448.78 k-ft
V	805.32 k	805.32 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/26/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.6250$  in  
 $*B_3 = 72.9600$  in

$d_o = 63.0000$  in

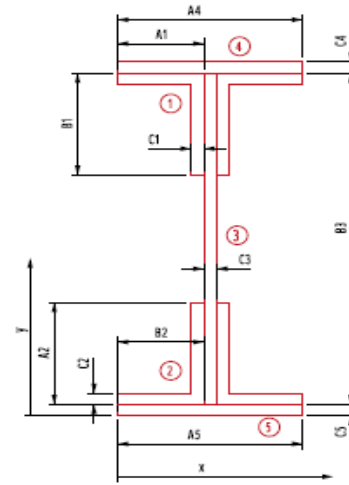
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 2.2500$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 2.2500$  in  
 $A_5 = 16.0000$  in



Girder 34-35 Section 5

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	74.8350	673.5150	0.4219	36.1050	11732.1392	11732.5611
	Vertical Leg	7.8750	71.8350	565.7006	18.0879	33.1050	8630.5356	8648.6235
2	Horizontal Leg	9.0000	2.6250	23.6250	0.4219	36.1050	11732.1392	11732.5611
	Vertical Leg	7.8750	5.6250	44.2969	18.0879	33.1050	8630.5356	8648.6235
3	Web Plate	45.6000	38.7300	1766.0880	20228.0141	0.0000	0.0000	20228.0141
4	Cover Plate Top	36.0000	76.3350	2748.0600	15.1875	37.6050	50908.8969	50924.0844
	Cover Plate Bottom	36.0000	1.1250	40.5000	15.1875	37.6050	50908.8969	50924.0844
<b>Total</b>		<b>151.35</b>		<b>5861.79</b>	<b>20295.41</b>		<b>142543.14</b>	<b>162838.55</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	38.7300 in	S <sub>top</sub> =	4204.46 in <sup>3</sup>	y-bar =	38.7300 in	S <sub>top</sub> =	4204.46 in <sup>3</sup>
I <sub>x</sub> =	162838.55 in <sup>4</sup>	S <sub>bott.</sub> =	4204.46 in <sup>3</sup>	I <sub>x</sub> =	162838.55 in <sup>4</sup>	S <sub>bott.</sub> =	4204.46 in <sup>3</sup>
C <sub>top</sub> =	38.7300 in	A =	151.3500 in <sup>2</sup>	C <sub>top</sub> =	38.7300 in	A =	151.3500 in <sup>2</sup>
C <sub>bottom</sub> =	38.7300 in	r <sub>x</sub> =	32.8010 in	C <sub>bottom</sub> =	38.7300 in	r <sub>x</sub> =	32.8010 in
J =	133.7656	Z =	4710.5978 in <sup>3</sup>	Z =	4710.5978 in <sup>3</sup>		



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Date 3/26/2012  
 Date 4/2/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457
3	Web Plate	45.6000	8.0000	364.8000	1.4844	0.0000	0.0000	1.4844
4	Top Cover Plate	36.0000	8.0000	288.0000	1536.0000	0.0000	0.0000	1536.0000
4	Bottom Cover Plate	36.0000	8.0000	288.0000	1536.0000	0.0000	0.0000	1536.0000
<b>Total</b>		<b>151.35</b>		<b>1210.80</b>	<b>3128.22</b>		<b>204.95</b>	<b>3333.17</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	416.65	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	416.65	in <sup>3</sup>
I <sub>y</sub> =	3333.17	in <sup>4</sup>	S <sub>left</sub> =	416.65	in <sup>3</sup>	I <sub>y</sub> =	3333.17	in <sup>4</sup>	S <sub>left</sub> =	416.65	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	151.3500	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	151.3500	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.6929	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.6929	in

Non-composite Capacities*		
	AB	AI
M	12954.14 k-ft	12954.14 k-ft
V	872.78 k	872.78 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/26/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.6250$  in  
 $*B_3 = 76.2000$  in

$d_o = 48.6875$  in

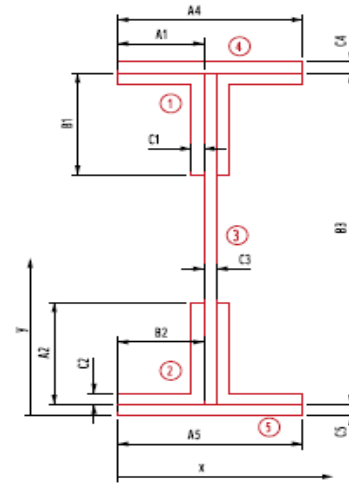
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 1.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 3.0000$  in  
 $A_5 = 16.0000$  in



**Girder 35-36 Section 1**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	78.8250	709.4250	0.4219	44.0389	17454.8513	17455.2732
	Vertical Leg	7.8750	75.8250	597.1219	18.0879	41.0389	13263.0301	13281.1180
2	Horizontal Leg	9.0000	3.3750	30.3750	0.4219	31.4111	8879.8942	8880.3161
	Vertical Leg	7.8750	6.3750	50.2031	18.0879	28.4111	6356.6097	6374.6976
3	Web Plate	47.6250	41.1000	1957.3875	23044.3088	6.3139	1898.6084	24942.9172
4	Cover Plate Top	24.0000	79.9500	1918.8000	4.5000	45.1639	48954.7477	48959.2477
	Cover Plate Bottom	48.0000	1.5000	72.0000	36.0000	33.2861	53182.1773	53218.1773
<b>Total</b>		<b>153.38</b>		<b>5335.31</b>	<b>23121.83</b>		<b>149989.92</b>	<b>173111.75</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	34.7861 in	S <sub>top</sub> =	3770.35 in <sup>3</sup>	y-bar =	34.7861 in	S <sub>top</sub> =	3770.35 in <sup>3</sup>
I <sub>x</sub> =	173111.75 in <sup>4</sup>	S <sub>bott.</sub> =	4976.47 in <sup>3</sup>	I <sub>x</sub> =	173111.75 in <sup>4</sup>	S <sub>bott.</sub> =	4976.47 in <sup>3</sup>
C <sub>top</sub> =	45.9139 in	A =	153.3750 in <sup>2</sup>	C <sub>top</sub> =	45.9139 in	A =	153.3750 in <sup>2</sup>
C <sub>bottom</sub> =	34.7861 in	r <sub>x</sub> =	33.5959 in	C <sub>bottom</sub> =	34.7861 in	r <sub>x</sub> =	33.5959 in
J =	174.5293	Z =	4736.0250 in <sup>3</sup>	Z =	4736.0250 in <sup>3</sup>		



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Date 3/26/2012  
 Date 4/2/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
3	Web Plate	47.6250	8.0000	381.0000	1.5503	0.0000	0.0000	1.5503	
4	Top Cover Plate	24.0000	8.0000	192.0000	1024.0000	0.0000	0.0000	1024.0000	
4	Bottom Cover Plate	48.0000	8.0000	384.0000	2048.0000	0.0000	0.0000	2048.0000	
<b>Total</b>		<b>153.38</b>		<b>1227.00</b>	<b>3128.29</b>		<b>204.95</b>	<b>3333.24</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	416.66	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	416.66	in <sup>3</sup>
I <sub>y</sub> =	3333.24	in <sup>4</sup>	S <sub>left</sub> =	416.66	in <sup>3</sup>	I <sub>y</sub> =	3333.24	in <sup>4</sup>	S <sub>left</sub> =	416.66	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	153.3750	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	153.3750	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.6618	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.6618	in

Non-composite Capacities*		
	AB	AI
M	13024.07 k-ft	13024.07 k-ft
V	911.54 k	911.54 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/26/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.6250$  in  
 $*B_3 = 73.5600$  in

$d_o = 60.0000$  in

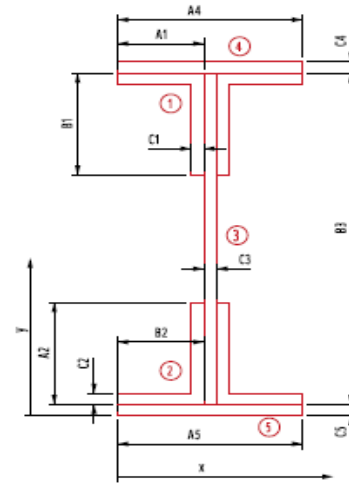
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 1.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 2.2500$  in  
 $A_5 = 16.0000$  in



**Girder 35-36 Section 2**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	75.4350	678.9150	0.4219	39.7248	14202.5425	14202.9643
	Vertical Leg	7.8750	72.4350	570.4256	18.0879	36.7248	10621.1025	10639.1904
2	Horizontal Leg	9.0000	2.6250	23.6250	0.4219	33.0852	9851.6701	9852.0920
	Vertical Leg	7.8750	5.6250	44.2969	18.0879	30.0852	7127.8110	7145.8989
3	Web Plate	45.9750	39.0300	1794.4043	20731.1757	3.3198	506.6959	21237.8716
4	Cover Plate Top	24.0000	76.5600	1837.4400	4.5000	40.8498	40048.9611	40053.4611
	Cover Plate Bottom	36.0000	1.1250	40.5000	15.1875	34.5852	43060.8813	43076.0688
<b>Total</b>		<b>139.73</b>		<b>4989.61</b>	<b>20787.88</b>		<b>125419.66</b>	<b>146207.55</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	35.7102 in	$S_{top} =$	3514.62 in <sup>3</sup>	y-bar =	35.7102 in	$S_{top} =$	3514.62 in <sup>3</sup>
$I_x =$	146207.55 in <sup>4</sup>	$S_{bott.} =$	4094.28 in <sup>3</sup>	$I_x =$	146207.55 in <sup>4</sup>	$S_{bott.} =$	4094.28 in <sup>3</sup>
$C_{top} =$	41.5998 in	A =	139.7250 in <sup>2</sup>	$C_{top} =$	41.5998 in	A =	139.7250 in <sup>2</sup>
$C_{bottom} =$	35.7102 in	$r_x =$	32.3480 in	$C_{bottom} =$	35.7102 in	$r_x =$	32.3480 in
J =	91.0645	Z =	4234.5990 in <sup>3</sup>	Z =	4234.5990 in <sup>3</sup>		





Made By CTG  
Checked By DMP

Date 3/26/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
3	Web Plate	45.9750	8.0000	367.8000	1.4966	0.0000	0.0000	1.4966	
4	Top Cover Plate	24.0000	8.0000	192.0000	1024.0000	0.0000	0.0000	1024.0000	
4	Bottom Cover Plate	36.0000	8.0000	288.0000	1536.0000	0.0000	0.0000	1536.0000	
<b>Total</b>		<b>139.73</b>		<b>1117.80</b>	<b>2616.23</b>		<b>204.95</b>	<b>2821.19</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	352.65	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	352.65	in <sup>3</sup>
I <sub>y</sub> =	2821.19	in <sup>4</sup>	S <sub>left</sub> =	352.65	in <sup>3</sup>	I <sub>y</sub> =	2821.19	in <sup>4</sup>	S <sub>left</sub> =	352.65	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	139.7250	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	139.7250	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.4934	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.4934	in

Non-composite Capacities*		
	AB	AI
M	11645.15 k-ft	11645.15 k-ft
V	879.96 k	879.96 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



Made By CTG  
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Date 3/26/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.6250$  in  
 $*B_3 = 71.5200$  in

$d_o = 60.0000$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 1.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 1.5000$  in  
 $A_5 = 16.0000$  in



**Girder 35-36 Section 3**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	72.6450	653.8050	0.4219	35.3850	11268.8840	11269.3059
	Vertical Leg	7.8750	69.6450	548.4544	18.0879	32.3850	8259.2073	8277.2952
2	Horizontal Leg	9.0000	1.8750	16.8750	0.4219	35.3850	11268.8840	11269.3059
	Vertical Leg	7.8750	4.8750	38.3906	18.0879	32.3850	8259.2073	8277.2952
3	Web Plate	44.7000	37.2600	1665.5220	19053.7862	0.0000	0.0000	19053.7862
4	Cover Plate Top	24.0000	73.7700	1770.4800	4.5000	36.5100	31991.5224	31996.0224
	Cover Plate Bottom	24.0000	0.7500	18.0000	4.5000	36.5100	31991.5224	31996.0224
<b>Total</b>		<b>126.45</b>		<b>4711.53</b>	<b>19099.81</b>		<b>103039.23</b>	<b>122139.03</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	37.2600 in	S <sub>top</sub> =	3278.02 in <sup>3</sup>	y-bar =	37.2600 in	S <sub>top</sub> =	3278.02 in <sup>3</sup>
I <sub>x</sub> =	122139.03 in <sup>4</sup>	S <sub>bottom</sub> =	3278.02 in <sup>3</sup>	I <sub>x</sub> =	122139.03 in <sup>4</sup>	S <sub>bottom</sub> =	3278.02 in <sup>3</sup>
C <sub>top</sub> =	37.2600 in	A =	126.4500 in <sup>2</sup>	C <sub>top</sub> =	37.2600 in	A =	126.4500 in <sup>2</sup>
C <sub>bottom</sub> =	37.2600 in	r <sub>x</sub> =	31.0791 in	C <sub>bottom</sub> =	37.2600 in	r <sub>x</sub> =	31.0791 in
J =	48.1484	Z =	3698.7098 in <sup>3</sup>	Z =	<b>3698.7098</b> in <sup>3</sup>		



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Date 3/26/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457
3	Web Plate	44.7000	8.0000	357.6000	1.4551	0.0000	0.0000	1.4551
4	Top Cover Plate	24.0000	8.0000	192.0000	1024.0000	0.0000	0.0000	1024.0000
4	Bottom Cover Plate	24.0000	8.0000	192.0000	1024.0000	0.0000	0.0000	1024.0000
<b>Total</b>		<b>126.45</b>		<b>1011.60</b>	<b>2104.19</b>		<b>204.95</b>	<b>2309.15</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	288.64	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	288.64	in <sup>3</sup>
I <sub>y</sub> =	2309.15	in <sup>4</sup>	S <sub>left</sub> =	288.64	in <sup>3</sup>	I <sub>y</sub> =	2309.15	in <sup>4</sup>	S <sub>left</sub> =	288.64	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	126.4500	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	126.4500	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.2733	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.2733	in

Non-composite Capacities*		
	AB	AI
M	10171.45 k-ft	10171.45 k-ft
V	855.56 k	855.56 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.6250$  in  
 $*B_3 = 67.6800$  in

$d_o = 61.5000$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.7500$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.7500$  in  
 $A_5 = 16.0000$  in



**Girder 35-36 Section 4**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	68.0550	612.4950	0.4219	33.4650	10079.1560	10079.5779
	Vertical Leg	7.8750	65.0550	512.3081	18.0879	30.4650	7308.9153	7327.0032
2	Horizontal Leg	9.0000	1.1250	10.1250	0.4219	33.4650	10079.1560	10079.5779
	Vertical Leg	7.8750	4.1250	32.4844	18.0879	30.4650	7308.9153	7327.0032
3	Web Plate	42.3000	34.5900	1463.1570	16146.5530	0.0000	0.0000	16146.5530
4	Cover Plate Top	12.0000	68.8050	825.6600	0.5625	34.2150	14047.9947	14048.5572
	Cover Plate Bottom	12.0000	0.3750	4.5000	0.5625	34.2150	14047.9947	14048.5572
<b>Total</b>		<b>100.05</b>		<b>3460.73</b>	<b>16184.70</b>		<b>62872.13</b>	<b>79056.83</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	34.5900 in	S <sub>top</sub> =	2285.54 in <sup>3</sup>	y-bar =	34.5900 in	S <sub>top</sub> =	2285.54 in <sup>3</sup>
I <sub>x</sub> =	79056.83 in <sup>4</sup>	S <sub>bottom</sub> =	2285.54 in <sup>3</sup>	I <sub>x</sub> =	79056.83 in <sup>4</sup>	S <sub>bottom</sub> =	2285.54 in <sup>3</sup>
C <sub>top</sub> =	34.5900 in	A =	100.0500 in <sup>2</sup>	C <sub>top</sub> =	34.5900 in	A =	100.0500 in <sup>2</sup>
C <sub>bottom</sub> =	34.5900 in	r <sub>x</sub> =	28.1100 in	C <sub>bottom</sub> =	34.5900 in	r <sub>x</sub> =	28.1100 in
J =	16.3359	Z =	2619.0698 in <sup>3</sup>	Z =	2619.0698		in <sup>3</sup>



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Date 3/26/2012  
 Date 4/2/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
3	Web Plate	42.3000	8.0000	338.4000	1.3770	0.0000	0.0000	1.3770	
4	Top Cover Plate	12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000	
4	Bottom Cover Plate	12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000	
<b>Total</b>		<b>100.05</b>		<b>800.40</b>	<b>1080.12</b>		<b>204.95</b>	<b>1285.07</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	160.63	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	160.63	in <sup>3</sup>
I <sub>y</sub> =	1285.07	in <sup>4</sup>	S <sub>left</sub> =	160.63	in <sup>3</sup>	I <sub>y</sub> =	1285.07	in <sup>4</sup>	S <sub>left</sub> =	160.63	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	100.0500	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	100.0500	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5839	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5839	in

Non-composite Capacities*		
	AB	AI
M	7202.44 k-ft	7202.44 k-ft
V	809.62 k	809.62 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.6250$  in  
 $*B_3 = 64.3200$  in

$d_o = 60.0000$  in

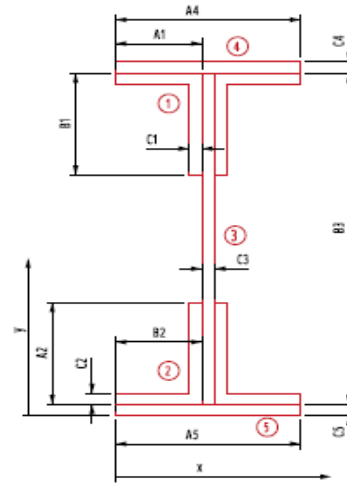
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 1.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 1.5000$  in  
 $A_5 = 16.0000$  in



**Girder 35-36 Section 5**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	65.4450	589.0050	0.4219	31.7850	9092.5760	9092.9979
	Vertical Leg	7.8750	62.4450	491.7544	18.0879	28.7850	6525.0378	6543.1257
2	Horizontal Leg	9.0000	1.8750	16.8750	0.4219	31.7850	9092.5760	9092.9979
	Vertical Leg	7.8750	4.8750	38.3906	18.0879	28.7850	6525.0378	6543.1257
3	Web Plate	40.2000	33.6600	1353.1320	13859.1590	0.0000	0.0000	13859.1590
4	Cover Plate Top	24.0000	66.5700	1597.6800	4.5000	32.9100	25993.6344	25998.1344
	Cover Plate Bottom	24.0000	0.7500	18.0000	4.5000	32.9100	25993.6344	25998.1344
<b>Total</b>		<b>121.95</b>		<b>4104.84</b>	<b>13905.18</b>		<b>83222.50</b>	<b>97127.67</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	33.6600 in	S <sub>top</sub> =	2885.55 in <sup>3</sup>	y-bar =	33.6600 in	S <sub>top</sub> =	2885.55 in <sup>3</sup>
I <sub>x</sub> =	97127.67 in <sup>4</sup>	S <sub>bott.</sub> =	2885.55 in <sup>3</sup>	I <sub>x</sub> =	97127.67 in <sup>4</sup>	S <sub>bott.</sub> =	2885.55 in <sup>3</sup>
C <sub>top</sub> =	33.6600 in	A =	121.9500 in <sup>2</sup>	C <sub>top</sub> =	33.6600 in	A =	121.9500 in <sup>2</sup>
C <sub>bottom</sub> =	33.6600 in	r <sub>x</sub> =	28.2215 in	C <sub>bottom</sub> =	33.6600 in	r <sub>x</sub> =	28.2215 in
J =	47.5625	Z =	3251.5898 in <sup>3</sup>	Z =	3251.5898		in <sup>3</sup>



Made By CTG  
Checked By DMP

Date 3/26/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457
3	Web Plate	40.2000	8.0000	321.6000	1.3086	0.0000	0.0000	1.3086
4	Top Cover Plate	24.0000	8.0000	192.0000	1024.0000	0.0000	0.0000	1024.0000
4	Bottom Cover Plate	24.0000	8.0000	192.0000	1024.0000	0.0000	0.0000	1024.0000
<b>Total</b>		<b>121.95</b>		<b>975.60</b>	<b>2104.05</b>		<b>204.95</b>	<b>2309.00</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	288.62	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	288.62	in <sup>3</sup>
I <sub>y</sub> =	2309.00	in <sup>4</sup>	S <sub>left</sub> =	288.62	in <sup>3</sup>	I <sub>y</sub> =	2309.00	in <sup>4</sup>	S <sub>left</sub> =	288.62	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	121.9500	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	121.9500	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.3513	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.3513	in

Non-composite Capacities*		
	AB	AI
M	8941.87 k-ft	8941.87 k-ft
V	769.43 k	769.43 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/26/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.6250$  in  
 $*B_3 = 63.0000$  in

$d_o = 60.0000$  in

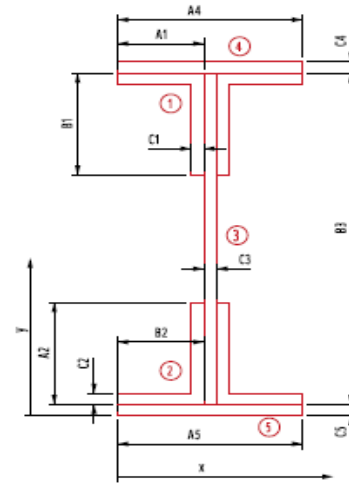
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 2.1250$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 2.1250$  in  
 $A_5 = 16.0000$  in



**Girder 35-36 Section 6**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	64.7500	582.7500	0.4219	31.1250	8718.8906	8719.3125
	Vertical Leg	7.8750	61.7500	486.2813	18.0879	28.1250	6229.2480	6247.3359
2	Horizontal Leg	9.0000	2.5000	22.5000	0.4219	31.1250	8718.8906	8719.3125
	Vertical Leg	7.8750	5.5000	43.3125	18.0879	28.1250	6229.2480	6247.3359
3	Web Plate	39.3750	33.6250	1323.9844	13023.2813	0.0000	0.0000	13023.2813
4	Cover Plate Top	34.0000	66.1875	2250.3750	12.7943	32.5625	36050.7578	36063.5521
	Cover Plate Bottom	34.0000	1.0625	36.1250	12.7943	32.5625	36050.7578	36063.5521
<b>Total</b>		<b>141.13</b>		<b>4745.33</b>	<b>13085.89</b>		<b>101997.79</b>	<b>115083.68</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	33.6250 in	S <sub>top</sub> =	3422.56 in <sup>3</sup>	y-bar =	33.6250 in	S <sub>top</sub> =	3422.56 in <sup>3</sup>
I <sub>x</sub> =	115083.68 in <sup>4</sup>	S <sub>bott.</sub> =	3422.56 in <sup>3</sup>	I <sub>x</sub> =	115083.68 in <sup>4</sup>	S <sub>bott.</sub> =	3422.56 in <sup>3</sup>
C <sub>top</sub> =	33.6250 in	A =	141.1250 in <sup>2</sup>	C <sub>top</sub> =	33.6250 in	A =	141.1250 in <sup>2</sup>
C <sub>bottom</sub> =	33.6250 in	r <sub>x</sub> =	28.5565 in	C <sub>bottom</sub> =	33.6250 in	r <sub>x</sub> =	28.5565 in
J =	113.8092	Z =	3837.6250 in <sup>3</sup>	Z =	3837.6250 in <sup>3</sup>		





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Date 3/26/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
3	Web Plate	39.3750	8.0000	315.0000	1.2817	0.0000	0.0000	1.2817	
4	Top Cover Plate	34.0000	8.0000	272.0000	1450.6667	0.0000	0.0000	1450.6667	
4	Bottom Cover Plate	34.0000	8.0000	272.0000	1450.6667	0.0000	0.0000	1450.6667	
<b>Total</b>		<b>141.13</b>		<b>1129.00</b>	<b>2957.35</b>		<b>204.95</b>	<b>3162.31</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	395.29	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	395.29	in <sup>3</sup>
I <sub>y</sub> =	3162.31	in <sup>4</sup>	S <sub>left</sub> =	395.29	in <sup>3</sup>	I <sub>y</sub> =	3162.31	in <sup>4</sup>	S <sub>left</sub> =	395.29	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	141.1250	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	141.1250	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.7337	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.7337	in

Non-composite Capacities*		
	AB	AI
M	10553.47 k-ft	10553.47 k-ft
V	753.64 k	753.64 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
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AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/26/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.6250$  in  
 $*B_3 = 61.5600$  in

$d_o = 51.7500$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 2.7500$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 2.7500$  in  
 $A_5 = 16.0000$  in



**Girder 35-36 Section 7**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	63.9350	575.4150	0.4219	30.4050	8320.1762	8320.5981
	Vertical Leg	7.8750	60.9350	479.8631	18.0879	27.4050	5914.3929	5932.4808
2	Horizontal Leg	9.0000	3.1250	28.1250	0.4219	30.4050	8320.1762	8320.5981
	Vertical Leg	7.8750	6.1250	48.2344	18.0879	27.4050	5914.3929	5932.4808
3	Web Plate	38.4750	33.5300	1290.0668	12150.5127	0.0000	0.0000	12150.5127
4	Cover Plate Top	44.0000	65.6850	2890.1400	27.7292	32.1550	45493.5371	45521.2663
	Cover Plate Bottom	44.0000	1.3750	60.5000	27.7292	32.1550	45493.5371	45521.2663
<b>Total</b>		<b>160.23</b>		<b>5372.34</b>	<b>12242.99</b>		<b>119456.21</b>	<b>131699.20</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	33.5300 in	S <sub>top</sub> =	3927.80 in <sup>3</sup>	y-bar =	33.5300 in	S <sub>top</sub> =	3927.80 in <sup>3</sup>
I <sub>x</sub> =	131699.20 in <sup>4</sup>	S <sub>bott.</sub> =	3927.80 in <sup>3</sup>	I <sub>x</sub> =	131699.20 in <sup>4</sup>	S <sub>bott.</sub> =	3927.80 in <sup>3</sup>
C <sub>top</sub> =	33.5300 in	A =	160.2250 in <sup>2</sup>	C <sub>top</sub> =	33.5300 in	A =	160.2250 in <sup>2</sup>
C <sub>bottom</sub> =	33.5300 in	r <sub>x</sub> =	28.6699 in	C <sub>bottom</sub> =	33.5300 in	r <sub>x</sub> =	28.6699 in
J =	233.1712	Z =	4400.6890 in <sup>3</sup>	Z =	4400.6890 in <sup>3</sup>		



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Date 3/26/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
3	Web Plate	38.4750	8.0000	307.8000	1.2524	0.0000	0.0000	1.2524	
4	Top Cover Plate	44.0000	8.0000	352.0000	1877.3333	0.0000	0.0000	1877.3333	
4	Bottom Cover Plate	44.0000	8.0000	352.0000	1877.3333	0.0000	0.0000	1877.3333	
<b>Total</b>		<b>160.23</b>		<b>1281.80</b>	<b>3810.66</b>		<b>204.95</b>	<b>4015.61</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	501.95	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	501.95	in <sup>3</sup>
I <sub>y</sub> =	4015.61	in <sup>4</sup>	S <sub>left</sub> =	501.95	in <sup>3</sup>	I <sub>y</sub> =	4015.61	in <sup>4</sup>	S <sub>left</sub> =	501.95	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	160.2250	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	160.2250	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	5.0062	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	5.0062	in

Non-composite Capacities*		
	AB	AI
M	12101.89 k-ft	12101.89 k-ft
V	736.41 k	736.41 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.6250$  in  
 $*B_3 = 60.7200$  in

$d_o = 60.0000$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 3.2500$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 3.2500$  in  
 $A_5 = 16.0000$  in



**Girder 35-36 Section 8**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	63.5950	572.3550	0.4219	29.9850	8091.9020	8092.3239
	Vertical Leg	7.8750	60.5950	477.1856	18.0879	26.9850	5734.4980	5752.5859
2	Horizontal Leg	9.0000	3.6250	32.6250	0.4219	29.9850	8091.9020	8092.3239
	Vertical Leg	7.8750	6.6250	52.1719	18.0879	26.9850	5734.4980	5752.5859
3	Web Plate	37.9500	33.6100	1275.4995	11659.8794	0.0000	0.0000	11659.8794
4	Cover Plate Top	52.0000	65.5950	3410.9400	45.7708	31.9850	53198.0917	53243.8625
	Cover Plate Bottom	52.0000	1.6250	84.5000	45.7708	31.9850	53198.0917	53243.8625
<b>Total</b>		<b>175.70</b>		<b>5905.28</b>	<b>11788.44</b>		<b>134048.98</b>	<b>145837.42</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	33.6100 in	S <sub>top</sub> =	4339.11 in <sup>3</sup>	y-bar =	33.6100 in	S <sub>top</sub> =	4339.11 in <sup>3</sup>
I <sub>x</sub> =	145837.42 in <sup>4</sup>	S <sub>bott.</sub> =	4339.11 in <sup>3</sup>	I <sub>x</sub> =	145837.42 in <sup>4</sup>	S <sub>bott.</sub> =	4339.11 in <sup>3</sup>
C <sub>top</sub> =	33.6100 in	A =	175.7000 in <sup>2</sup>	C <sub>top</sub> =	33.6100 in	A =	175.7000 in <sup>2</sup>
C <sub>bottom</sub> =	33.6100 in	r <sub>x</sub> =	28.8104 in	C <sub>bottom</sub> =	33.6100 in	r <sub>x</sub> =	28.8104 in
J =	377.4362	Z =	4867.2648 in <sup>3</sup>	Z =	4867.2648 in <sup>3</sup>		



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
3	Web Plate	37.9500	8.0000	303.6000	1.2354	0.0000	0.0000	1.2354	
4	Top Cover Plate	52.0000	8.0000	416.0000	2218.6667	0.0000	0.0000	2218.6667	
4	Bottom Cover Plate	52.0000	8.0000	416.0000	2218.6667	0.0000	0.0000	2218.6667	
<b>Total</b>		<b>175.70</b>		<b>1405.60</b>	<b>4493.31</b>		<b>204.95</b>	<b>4698.26</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	587.28	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	587.28	in <sup>3</sup>
I <sub>y</sub> =	4698.26	in <sup>4</sup>	S <sub>left</sub> =	587.28	in <sup>3</sup>	I <sub>y</sub> =	4698.26	in <sup>4</sup>	S <sub>left</sub> =	587.28	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	175.7000	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	175.7000	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	5.1711	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	5.1711	in

Non-composite Capacities*		
	AB	AI
M	13384.98 k-ft	13384.98 k-ft
V	726.36 k	726.36 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.6250$  in  
 $*B_3 = 63.0000$  in

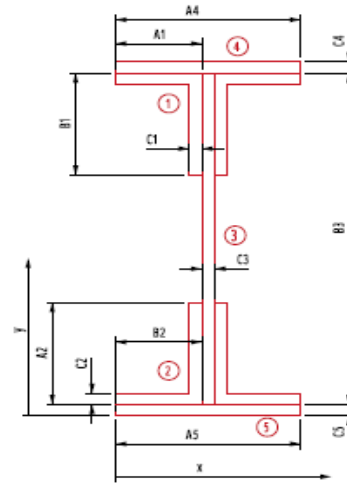
$d_o = 60.0000$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 2.7500$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 2.7500$  in  
 $A_5 = 16.0000$  in



**Girder 35-36 Section 9**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	65.3750	588.3750	0.4219	31.1250	8718.8906	8719.3125
	Vertical Leg	7.8750	62.3750	491.2031	18.0879	28.1250	6229.2480	6247.3359
2	Horizontal Leg	9.0000	3.1250	28.1250	0.4219	31.1250	8718.8906	8719.3125
	Vertical Leg	7.8750	6.1250	48.2344	18.0879	28.1250	6229.2480	6247.3359
3	Web Plate	39.3750	34.2500	1348.5938	13023.2813	0.0000	0.0000	13023.2813
4	Cover Plate Top	44.0000	67.1250	2953.5000	27.7292	32.8750	47553.6875	47581.4167
	Cover Plate Bottom	44.0000	1.3750	60.5000	27.7292	32.8750	47553.6875	47581.4167
<b>Total</b>		<b>161.13</b>		<b>5518.53</b>	<b>13115.76</b>		<b>125003.65</b>	<b>138119.41</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	34.2500	in	S <sub>top</sub> =	4032.68	in <sup>3</sup>	y-bar =	34.2500	in	S <sub>top</sub> =	4032.68	in <sup>3</sup>
I <sub>x</sub> =	138119.41	in <sup>4</sup>	S <sub>bottom</sub> =	4032.68	in <sup>3</sup>	I <sub>x</sub> =	138119.41	in <sup>4</sup>	S <sub>bottom</sub> =	4032.68	in <sup>3</sup>
C <sub>top</sub> =	34.2500	in	A =	161.1250	in <sup>2</sup>	C <sub>top</sub> =	34.2500	in	A =	161.1250	in <sup>2</sup>
C <sub>bottom</sub> =	34.2500	in	r <sub>x</sub> =	29.2783	in	C <sub>bottom</sub> =	34.2500	in	r <sub>x</sub> =	29.2783	in
J =	233.2884		Z =	4516.3750	in <sup>3</sup>	Z =	4516.3750	in <sup>3</sup>			



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Date 3/26/2012  
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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
3	Web Plate	39.3750	8.0000	315.0000	1.2817	0.0000	0.0000	1.2817	
4	Top Cover Plate	44.0000	8.0000	352.0000	1877.3333	0.0000	0.0000	1877.3333	
4	Bottom Cover Plate	44.0000	8.0000	352.0000	1877.3333	0.0000	0.0000	1877.3333	
<b>Total</b>		<b>161.13</b>		<b>1289.00</b>	<b>3810.69</b>		<b>204.95</b>	<b>4015.64</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	501.95	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	501.95	in <sup>3</sup>
I <sub>y</sub> =	4015.64	in <sup>4</sup>	S <sub>left</sub> =	501.95	in <sup>3</sup>	I <sub>y</sub> =	4015.64	in <sup>4</sup>	S <sub>left</sub> =	501.95	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	161.1250	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	161.1250	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.9922	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.9922	in

Non-composite Capacities*		
	AB	AI
M	12420.03 k-ft	12420.03 k-ft
V	753.64 k	753.64 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/26/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.6250$  in  
 $*B_3 = 65.0400$  in

$d_o = 60.0000$  in

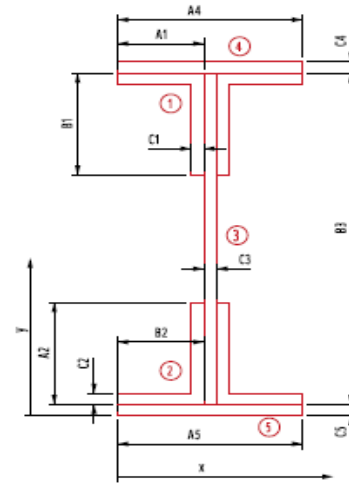
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 2.1250$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 2.1250$  in  
 $A_5 = 16.0000$  in



Girder 35-36 Section 10

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	66.7900	601.1100	0.4219	32.1450	9299.7092	9300.1311
	Vertical Leg	7.8750	63.7900	502.3463	18.0879	29.1450	6689.2693	6707.3572
2	Horizontal Leg	9.0000	2.5000	22.5000	0.4219	32.1450	9299.7092	9300.1311
	Vertical Leg	7.8750	5.5000	43.3125	18.0879	29.1450	6689.2693	6707.3572
3	Web Plate	40.6500	34.6450	1408.3193	14329.8079	0.0000	0.0000	14329.8079
4	Cover Plate Top	34.0000	68.2275	2319.7350	12.7943	33.5825	38344.6664	38357.4607
	Cover Plate Bottom	34.0000	1.0625	36.1250	12.7943	33.5825	38344.6664	38357.4607
<b>Total</b>		<b>142.40</b>		<b>4933.45</b>	<b>14392.42</b>		<b>108667.29</b>	<b>123059.71</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	34.6450 in	S <sub>top</sub> =	3552.02 in <sup>3</sup>	y-bar =	34.6450 in	S <sub>top</sub> =	3552.02 in <sup>3</sup>
I <sub>x</sub> =	123059.71 in <sup>4</sup>	S <sub>bottom</sub> =	3552.02 in <sup>3</sup>	I <sub>x</sub> =	123059.71 in <sup>4</sup>	S <sub>bottom</sub> =	3552.02 in <sup>3</sup>
C <sub>top</sub> =	34.6450 in	A =	142.4000 in <sup>2</sup>	C <sub>top</sub> =	34.6450 in	A =	142.4000 in <sup>2</sup>
C <sub>bottom</sub> =	34.6450 in	r <sub>x</sub> =	29.3970 in	C <sub>bottom</sub> =	34.6450 in	r <sub>x</sub> =	29.3970 in
J =	113.9753	Z =	3982.2228 in <sup>3</sup>	Z =	3982.2228 in <sup>3</sup>		





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Date 3/26/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
3	Web Plate	40.6500	8.0000	325.2000	1.3232	0.0000	0.0000	1.3232	
4	Top Cover Plate	34.0000	8.0000	272.0000	1450.6667	0.0000	0.0000	1450.6667	
4	Bottom Cover Plate	34.0000	8.0000	272.0000	1450.6667	0.0000	0.0000	1450.6667	
<b>Total</b>		<b>142.40</b>		<b>1139.20</b>	<b>2957.39</b>		<b>204.95</b>	<b>3162.35</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	395.29	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	395.29	in <sup>3</sup>
I <sub>y</sub> =	3162.35	in <sup>4</sup>	S <sub>left</sub> =	395.29	in <sup>3</sup>	I <sub>y</sub> =	3162.35	in <sup>4</sup>	S <sub>left</sub> =	395.29	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	142.4000	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	142.4000	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.7125	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.7125	in

Non-composite Capacities*		
	AB	AI
M	10951.11 k-ft	10951.11 k-ft
V	778.04 k	778.04 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/26/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

**Top Angles:**

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

**Bottom Angles:**

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

**Web Plate:**

$C_3 = 0.6250$  in  
 $*B_3 = 65.4000$  in

$d_o = 60.0000$  in

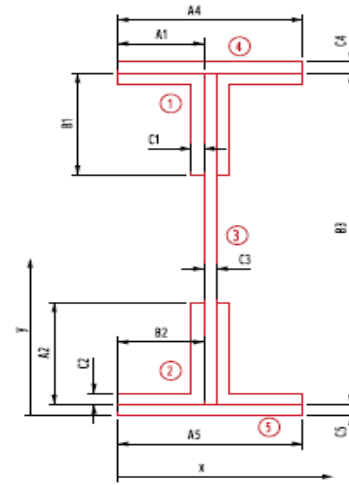
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

**Top Cover Plate:**

$C_4 = 1.5000$  in  
 $A_4 = 16.0000$  in

**Btm Cover Plate:**

$C_5 = 1.5000$  in  
 $A_5 = 16.0000$  in



Girder 35-36 Section 11

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	66.5250	598.7250	0.4219	32.3250	9404.1506	9404.5725
	Vertical Leg	7.8750	63.5250	500.2594	18.0879	29.3250	6772.1505	6790.2384
2	Horizontal Leg	9.0000	1.8750	16.8750	0.4219	32.3250	9404.1506	9404.5725
	Vertical Leg	7.8750	4.8750	38.3906	18.0879	29.3250	6772.1505	6790.2384
3	Web Plate	40.8750	34.2000	1397.9250	14569.0763	0.0000	0.0000	14569.0763
4	Cover Plate Top	24.0000	67.6500	1623.6000	4.5000	33.4500	26853.6600	26858.1600
	Cover Plate Bottom	24.0000	0.7500	18.0000	4.5000	33.4500	26853.6600	26858.1600
<b>Total</b>		<b>122.63</b>		<b>4193.78</b>	<b>14615.10</b>		<b>86059.92</b>	<b>100675.02</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	34.2000 in	S <sub>top</sub> =	2943.71 in <sup>3</sup>	y-bar =	34.2000 in	S <sub>top</sub> =	2943.71 in <sup>3</sup>
I <sub>x</sub> =	100675.02 in <sup>4</sup>	S <sub>bott.</sub> =	2943.71 in <sup>3</sup>	I <sub>x</sub> =	100675.02 in <sup>4</sup>	S <sub>bott.</sub> =	2943.71 in <sup>3</sup>
C <sub>top</sub> =	34.2000 in	A =	122.6250 in <sup>2</sup>	C <sub>top</sub> =	34.2000 in	A =	122.6250 in <sup>2</sup>
C <sub>bottom</sub> =	34.2000 in	r <sub>x</sub> =	28.6531 in	C <sub>bottom</sub> =	34.2000 in	r <sub>x</sub> =	28.6531 in
J =	47.6504	Z =	3317.6250 in <sup>3</sup>	Z =	3317.6250 in <sup>3</sup>		



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Date 3/26/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
3	Web Plate	40.8750	8.0000	327.0000	1.3306	0.0000	0.0000	1.3306	
4	Top Cover Plate	24.0000	8.0000	192.0000	1024.0000	0.0000	0.0000	1024.0000	
4	Bottom Cover Plate	24.0000	8.0000	192.0000	1024.0000	0.0000	0.0000	1024.0000	
<b>Total</b>		<b>122.63</b>		<b>981.00</b>	<b>2104.07</b>		<b>204.95</b>	<b>2309.02</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	288.63	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	288.63	in <sup>3</sup>
I <sub>y</sub> =	2309.02	in <sup>4</sup>	S <sub>left</sub> =	288.63	in <sup>3</sup>	I <sub>y</sub> =	2309.02	in <sup>4</sup>	S <sub>left</sub> =	288.63	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	122.6250	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	122.6250	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.3393	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.3393	in

Non-composite Capacities*		
	AB	AI
M	9123.47 k-ft	9123.47 k-ft
V	782.35 k	782.35 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
------------------	-----------

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/26/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

**Top Angles:**  $A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

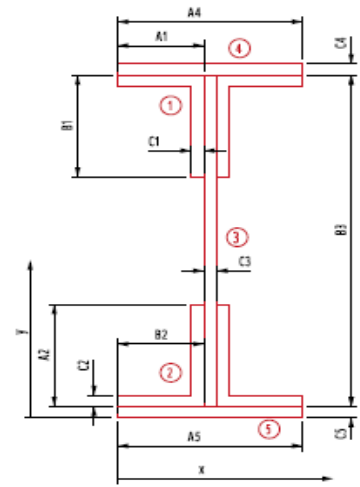
**Bottom Angles:**  $B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

**Web Plate:**  $C_3 = 0.6250$  in  
 $*B_3 = 68.1600$  in

$d_o = 62.8125$  in  
 $d_o =$  stiffener spacing for shear check  
 Use "N/A" for no stiffeners

**Top Cover Plate:**  $C_4 = 0.7500$  in  
 $A_4 = 16.0000$  in

**Btm Cover Plate:**  $C_5 = 0.7500$  in  
 $A_5 = 16.0000$  in



**Girder 35-36 Section 12**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	68.5350	616.8150	0.4219	33.7050	10224.2432	10224.6651
	Vertical Leg	7.8750	65.5350	516.0881	18.0879	30.7050	7424.5266	7442.6145
2	Horizontal Leg	9.0000	1.1250	10.1250	0.4219	33.7050	10224.2432	10224.6651
	Vertical Leg	7.8750	4.1250	32.4844	18.0879	30.7050	7424.5266	7442.6145
3	Web Plate	42.6000	34.8300	1483.7580	16492.5389	0.0000	0.0000	16492.5389
4	Cover Plate Top	12.0000	69.2850	831.4200	0.5625	34.4550	14245.7643	14246.3268
	Cover Plate Bottom	12.0000	0.3750	4.5000	0.5625	34.4550	14245.7643	14246.3268
<b>Total</b>		<b>100.35</b>		<b>3495.19</b>	<b>16530.68</b>		<b>63789.07</b>	<b>80319.75</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	34.8300	in	S <sub>top</sub> =	2306.05	in <sup>3</sup>	y-bar =	34.8300	in	S <sub>top</sub> =	2306.05	in <sup>3</sup>
I <sub>x</sub> =	80319.75	n <sup>4</sup>	S <sub>bott.</sub> =	2306.05	in <sup>3</sup>	I <sub>x</sub> =	80319.75	in <sup>4</sup>	S <sub>bott.</sub> =	2306.05	in <sup>3</sup>
C <sub>top</sub> =	34.8300	in	A =	100.3500	in <sup>2</sup>	C <sub>top</sub> =	34.8300	in	A =	100.3500	in <sup>2</sup>
C <sub>bottom</sub> =	34.8300	in	r <sub>x</sub> =	28.2913	in	C <sub>bottom</sub> =	34.8300	in	r <sub>x</sub> =	28.2913	in
J =	16.3750		Z =	2643.1178	in <sup>3</sup>	Z =	2643.1178	in <sup>3</sup>			



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Date 3/26/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
3	Web Plate	42.6000	8.0000	340.8000	1.3867	0.0000	0.0000	1.3867	
4	Top Cover Plate	12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000	
4	Bottom Cover Plate	12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000	
<b>Total</b>		<b>100.35</b>		<b>802.80</b>	<b>1080.13</b>		<b>204.95</b>	<b>1285.08</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	160.63	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	160.63	in <sup>3</sup>
I <sub>y</sub> =	1285.08	in <sup>4</sup>	S <sub>left</sub> =	160.63	in <sup>3</sup>	I <sub>y</sub> =	1285.08	in <sup>4</sup>	S <sub>left</sub> =	160.63	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	100.3500	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	100.3500	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5785	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5785	in

Non-composite Capacities*		
	AB	AI
M	7268.57 k-ft	7268.57 k-ft
V	815.36 k	815.36 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/26/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.6250$  in  
 $*B_3 = 71.2800$  in

$d_o = 63.0000$  in

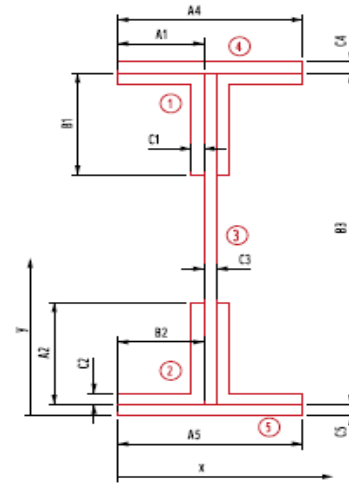
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 1.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 1.5000$  in  
 $A_5 = 16.0000$  in



Girder 35-36 Section 13

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	72.4050	651.6450	0.4219	35.2650	11192.5820	11193.0039
	Vertical Leg	7.8750	69.4050	546.5644	18.0879	32.2650	8198.1130	8216.2009
2	Horizontal Leg	9.0000	1.8750	16.8750	0.4219	35.2650	11192.5820	11193.0039
	Vertical Leg	7.8750	4.8750	38.3906	18.0879	32.2650	8198.1130	8216.2009
3	Web Plate	44.5500	37.1400	1654.5870	18862.6126	0.0000	0.0000	18862.6126
4	Cover Plate Top	24.0000	73.5300	1764.7200	4.5000	36.3900	31781.5704	31786.0704
	Cover Plate Bottom	24.0000	0.7500	18.0000	4.5000	36.3900	31781.5704	31786.0704
<b>Total</b>		<b>126.30</b>		<b>4690.78</b>	<b>18908.63</b>		<b>102344.53</b>	<b>121253.16</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	37.1400 in	S <sub>top</sub> =	3264.76 in <sup>3</sup>	y-bar =	37.1400 in	S <sub>top</sub> =	3264.76 in <sup>3</sup>
I <sub>x</sub> =	121253.16 in <sup>4</sup>	S <sub>bott.</sub> =	3264.76 in <sup>3</sup>	I <sub>x</sub> =	121253.16 in <sup>4</sup>	S <sub>bott.</sub> =	3264.76 in <sup>3</sup>
C <sub>top</sub> =	37.1400 in	A =	126.3000 in <sup>2</sup>	C <sub>top</sub> =	37.1400 in	A =	126.3000 in <sup>2</sup>
C <sub>bottom</sub> =	37.1400 in	r <sub>x</sub> =	30.9845 in	C <sub>bottom</sub> =	37.1400 in	r <sub>x</sub> =	30.9845 in
J =	48.1289	Z =	3683.5448 in <sup>3</sup>	Z =	3683.5448 in <sup>3</sup>		



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Date 3/26/2012  
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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
3	Web Plate	44.5500	8.0000	356.4000	1.4502	0.0000	0.0000	1.4502	
4	Top Cover Plate	24.0000	8.0000	192.0000	1024.0000	0.0000	0.0000	1024.0000	
4	Bottom Cover Plate	24.0000	8.0000	192.0000	1024.0000	0.0000	0.0000	1024.0000	
<b>Total</b>		<b>126.30</b>		<b>1010.40</b>	<b>2104.19</b>		<b>204.95</b>	<b>2309.14</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	288.64	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	288.64	in <sup>3</sup>
I <sub>y</sub> =	2309.14	in <sup>4</sup>	S <sub>left</sub> =	288.64	in <sup>3</sup>	I <sub>y</sub> =	2309.14	in <sup>4</sup>	S <sub>left</sub> =	288.64	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	126.3000	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	126.3000	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.2759	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.2759	in

Non-composite Capacities*		
	AB	AI
M	10129.75 k-ft	10129.75 k-ft
V	852.69 k	852.69 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
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AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/26/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.6250$  in  
 $*B_3 = 73.3200$  in

$d_o = 63.0000$  in

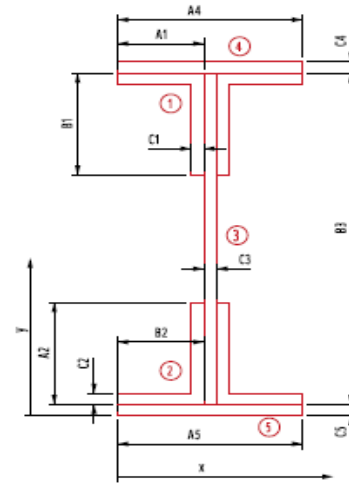
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 2.2500$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 2.2500$  in  
 $A_5 = 16.0000$  in



Girder 35-36 Section 14

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	75.1950	676.7550	0.4219	36.2850	11849.4110	11849.8329
	Vertical Leg	7.8750	72.1950	568.5356	18.0879	33.2850	8724.6434	8742.7313
2	Horizontal Leg	9.0000	2.6250	23.6250	0.4219	36.2850	11849.4110	11849.8329
	Vertical Leg	7.8750	5.6250	44.2969	18.0879	33.2850	8724.6434	8742.7313
3	Web Plate	45.8250	38.9100	1783.0508	20528.9218	0.0000	0.0000	20528.9218
4	Cover Plate Top	36.0000	76.6950	2761.0200	15.1875	37.7850	51397.4241	51412.6116
	Cover Plate Bottom	36.0000	1.1250	40.5000	15.1875	37.7850	51397.4241	51412.6116
<b>Total</b>		<b>151.58</b>		<b>5897.78</b>	<b>20596.32</b>		<b>143942.96</b>	<b>164539.27</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	38.9100 in	S <sub>top</sub> =	4228.71 in <sup>3</sup>	y-bar =	38.9100 in	S <sub>top</sub> =	4228.71 in <sup>3</sup>
I <sub>x</sub> =	164539.27 in <sup>4</sup>	S <sub>bottom</sub> =	4228.71 in <sup>3</sup>	I <sub>x</sub> =	164539.27 in <sup>4</sup>	S <sub>bottom</sub> =	4228.71 in <sup>3</sup>
C <sub>top</sub> =	38.9100 in	A =	151.5750 in <sup>2</sup>	C <sub>top</sub> =	38.9100 in	A =	151.5750 in <sup>2</sup>
C <sub>bottom</sub> =	38.9100 in	r <sub>x</sub> =	32.9474 in	C <sub>bottom</sub> =	38.9100 in	r <sub>x</sub> =	32.9474 in
J =	133.7949	Z =	4737.8610 in <sup>3</sup>	Z =	4737.8610 in <sup>3</sup>		





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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
3	Web Plate	45.8250	8.0000	366.6000	1.4917	0.0000	0.0000	1.4917	
4	Top Cover Plate	36.0000	8.0000	288.0000	1536.0000	0.0000	0.0000	1536.0000	
4	Bottom Cover Plate	36.0000	8.0000	288.0000	1536.0000	0.0000	0.0000	1536.0000	
<b>Total</b>		<b>151.58</b>		<b>1212.60</b>	<b>3128.23</b>		<b>204.95</b>	<b>3333.18</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	416.65	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	416.65	in <sup>3</sup>
I <sub>y</sub> =	3333.18	in <sup>4</sup>	S <sub>left</sub> =	416.65	in <sup>3</sup>	I <sub>y</sub> =	3333.18	in <sup>4</sup>	S <sub>left</sub> =	416.65	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	151.5750	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	151.5750	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.6894	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.6894	in

Non-composite Capacities*		
	AB	AI
M	13029.12 k-ft	13029.12 k-ft
V	877.09 k	877.09 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/26/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.6250$  in  
 $*B_3 = 76.0800$  in

$d_o = 51.6875$  in

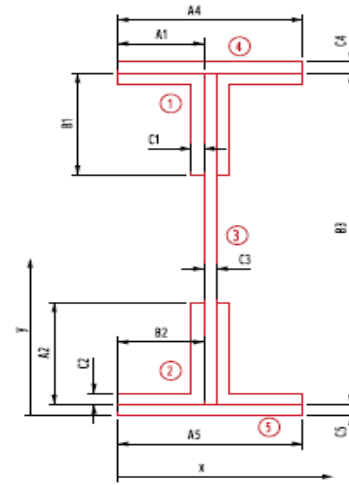
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 3.0000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 3.0000$  in  
 $A_5 = 16.0000$  in



Girder 35-36 Section 15

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	78.7050	708.3450	0.4219	37.6650	12767.8700	12768.2919
	Vertical Leg	7.8750	75.7050	596.1769	18.0879	34.6650	9463.0900	9481.1779
2	Horizontal Leg	9.0000	3.3750	30.3750	0.4219	37.6650	12767.8700	12768.2919
	Vertical Leg	7.8750	6.3750	50.2031	18.0879	34.6650	9463.0900	9481.1779
3	Web Plate	47.5500	41.0400	1951.4520	22935.6094	0.0000	0.0000	22935.6094
4	Cover Plate Top	48.0000	80.5800	3867.8400	36.0000	39.5400	75043.7568	75079.7568
	Cover Plate Bottom	48.0000	1.5000	72.0000	36.0000	39.5400	75043.7568	75079.7568
<b>Total</b>		<b>177.30</b>		<b>7276.39</b>	<b>23044.63</b>		<b>194549.43</b>	<b>217594.06</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	41.0400 in	S <sub>top</sub> =	5302.00 in <sup>3</sup>	y-bar =	41.0400 in	S <sub>top</sub> =	5302.00 in <sup>3</sup>
I <sub>x</sub> =	217594.06 in <sup>4</sup>	S <sub>bottom</sub> =	5302.00 in <sup>3</sup>	I <sub>x</sub> =	217594.06 in <sup>4</sup>	S <sub>bottom</sub> =	5302.00 in <sup>3</sup>
C <sub>top</sub> =	41.0400 in	A =	177.3000 in <sup>2</sup>	C <sub>top</sub> =	41.0400 in	A =	177.3000 in <sup>2</sup>
C <sub>bottom</sub> =	41.0400 in	r <sub>x</sub> =	35.0323 in	C <sub>bottom</sub> =	41.0400 in	r <sub>x</sub> =	35.0323 in
J =	300.5195	Z =	5924.1848 in <sup>3</sup>	Z =	5924.1848 in <sup>3</sup>		



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Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
3	Web Plate	47.5500	8.0000	380.4000	1.5479	0.0000	0.0000	1.5479	
4	Top Cover Plate	48.0000	8.0000	384.0000	2048.0000	0.0000	0.0000	2048.0000	
4	Bottom Cover Plate	48.0000	8.0000	384.0000	2048.0000	0.0000	0.0000	2048.0000	
<b>Total</b>		<b>177.30</b>		<b>1418.40</b>	<b>4152.29</b>		<b>204.95</b>	<b>4357.24</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	544.65	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	544.65	in <sup>3</sup>
I <sub>y</sub> =	4357.24	in <sup>4</sup>	S <sub>left</sub> =	544.65	in <sup>3</sup>	I <sub>y</sub> =	4357.24	in <sup>4</sup>	S <sub>left</sub> =	544.65	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	177.3000	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	177.3000	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.9574	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.9574	in

Non-composite Capacities*		
	AB	AI
M	16291.51 k-ft	16291.51 k-ft
V	910.11 k	910.11 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/26/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.6250$  in  
 $*B_3 = 72.9600$  in

$d_o = 63.0000$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 2.2500$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 2.2500$  in  
 $A_5 = 16.0000$  in



**Girder 36-37 Section 1**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	74.8350	673.5150	0.4219	36.1050	11732.1392	11732.5611
	Vertical Leg	7.8750	71.8350	565.7006	18.0879	33.1050	8630.5356	8648.6235
2	Horizontal Leg	9.0000	2.6250	23.6250	0.4219	36.1050	11732.1392	11732.5611
	Vertical Leg	7.8750	5.6250	44.2969	18.0879	33.1050	8630.5356	8648.6235
3	Web Plate	45.6000	38.7300	1766.0880	20228.0141	0.0000	0.0000	20228.0141
4	Cover Plate Top	36.0000	76.3350	2748.0600	15.1875	37.6050	50908.8969	50924.0844
	Cover Plate Bottom	36.0000	1.1250	40.5000	15.1875	37.6050	50908.8969	50924.0844
<b>Total</b>		<b>151.35</b>		<b>5861.79</b>	<b>20295.41</b>		<b>142543.14</b>	<b>162838.55</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	38.7300 in	S <sub>top</sub> =	4204.46 in <sup>3</sup>	y-bar =	38.7300 in	S <sub>top</sub> =	4204.46 in <sup>3</sup>
I <sub>x</sub> =	162838.55 in <sup>4</sup>	S <sub>bottom</sub> =	4204.46 in <sup>3</sup>	I <sub>x</sub> =	162838.55 in <sup>4</sup>	S <sub>bottom</sub> =	4204.46 in <sup>3</sup>
C <sub>top</sub> =	38.7300 in	A =	151.3500 in <sup>2</sup>	C <sub>top</sub> =	38.7300 in	A =	151.3500 in <sup>2</sup>
C <sub>bottom</sub> =	38.7300 in	r <sub>x</sub> =	32.8010 in	C <sub>bottom</sub> =	38.7300 in	r <sub>x</sub> =	32.8010 in
J =	133.7656	Z =	4710.5978 in <sup>3</sup>			Z =	4710.5978 in <sup>3</sup>



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Date 3/26/2012  
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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
3	Web Plate	45.6000	8.0000	364.8000	1.4844	0.0000	0.0000	1.4844	
4	Top Cover Plate	36.0000	8.0000	288.0000	1536.0000	0.0000	0.0000	1536.0000	
4	Bottom Cover Plate	36.0000	8.0000	288.0000	1536.0000	0.0000	0.0000	1536.0000	
<b>Total</b>		<b>151.35</b>		<b>1210.80</b>	<b>3128.22</b>		<b>204.95</b>	<b>3333.17</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	416.65	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	416.65	in <sup>3</sup>
I <sub>y</sub> =	3333.17	in <sup>4</sup>	S <sub>left</sub> =	416.65	in <sup>3</sup>	I <sub>y</sub> =	3333.17	in <sup>4</sup>	S <sub>left</sub> =	416.65	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	151.3500	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	151.3500	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.6929	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.6929	in

Non-composite Capacities*		
	AB	AI
M	12954.14 k-ft	12954.14 k-ft
V	872.78 k	872.78 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.6250$  in  
 $*B_3 = 66.7200$  in

$d_o = 63.0000$  in

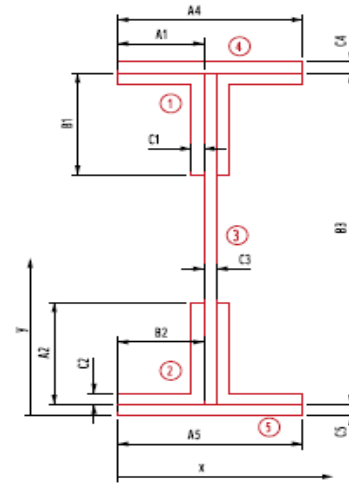
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 1.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 1.5000$  in  
 $A_5 = 16.0000$  in



Girder 36-37 Section 2

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	67.8450	610.6050	0.4219	32.9850	9792.0920	9792.5139
	Vertical Leg	7.8750	64.8450	510.6544	18.0879	29.9850	7080.4143	7098.5022
2	Horizontal Leg	9.0000	1.8750	16.8750	0.4219	32.9850	9792.0920	9792.5139
	Vertical Leg	7.8750	4.8750	38.3906	18.0879	29.9850	7080.4143	7098.5022
3	Web Plate	41.7000	34.8600	1453.6620	15469.1654	0.0000	0.0000	15469.1654
4	Cover Plate Top	24.0000	68.9700	1655.2800	4.5000	34.1100	27923.8104	27928.3104
	Cover Plate Bottom	24.0000	0.7500	18.0000	4.5000	34.1100	27923.8104	27928.3104
<b>Total</b>		<b>123.45</b>		<b>4303.47</b>	<b>15515.18</b>		<b>89592.63</b>	<b>105107.82</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	34.8600 in	S <sub>top</sub> =	3015.14 in <sup>3</sup>	y-bar =	34.8600 in	S <sub>top</sub> =	3015.14 in <sup>3</sup>
I <sub>x</sub> =	105107.82 in <sup>4</sup>	S <sub>bottom</sub> =	3015.14 in <sup>3</sup>	I <sub>x</sub> =	105107.82 in <sup>4</sup>	S <sub>bottom</sub> =	3015.14 in <sup>3</sup>
C <sub>top</sub> =	34.8600 in	A =	123.4500 in <sup>2</sup>	C <sub>top</sub> =	34.8600 in	A =	123.4500 in <sup>2</sup>
C <sub>bottom</sub> =	34.8600 in	r <sub>x</sub> =	29.1791 in	C <sub>bottom</sub> =	34.8600 in	r <sub>x</sub> =	29.1791 in
J =	47.7578	Z =	3398.8298 in <sup>3</sup>	Z =	3398.8298 in <sup>3</sup>		



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Date 3/26/2012  
 Date 4/2/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457
3	Web Plate	41.7000	8.0000	333.6000	1.3574	0.0000	0.0000	1.3574
4	Top Cover Plate	24.0000	8.0000	192.0000	1024.0000	0.0000	0.0000	1024.0000
4	Bottom Cover Plate	24.0000	8.0000	192.0000	1024.0000	0.0000	0.0000	1024.0000
<b>Total</b>		<b>123.45</b>		<b>987.60</b>	<b>2104.10</b>		<b>204.95</b>	<b>2309.05</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	288.63	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	288.63	in <sup>3</sup>
I <sub>y</sub> =	2309.05	in <sup>4</sup>	S <sub>left</sub> =	288.63	in <sup>3</sup>	I <sub>y</sub> =	2309.05	in <sup>4</sup>	S <sub>left</sub> =	288.63	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	123.4500	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	123.4500	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.3248	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.3248	in

Non-composite Capacities*		
	AB	AI
M	9346.78 k-ft	9346.78 k-ft
V	798.14 k	798.14 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/26/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.6250$  in  
 $*B_3 = 61.5600$  in

$d_o = 65.0000$  in

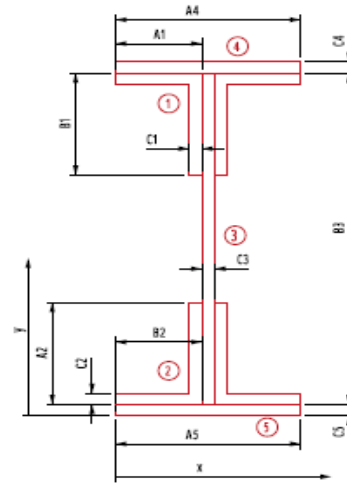
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.7500$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.7500$  in  
 $A_5 = 16.0000$  in



**Girder 36-37 Section 3**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	61.9350	557.4150	0.4219	30.4050	8320.1762	8320.5981
	Vertical Leg	7.8750	58.9350	464.1131	18.0879	27.4050	5914.3929	5932.4808
2	Horizontal Leg	9.0000	1.1250	10.1250	0.4219	30.4050	8320.1762	8320.5981
	Vertical Leg	7.8750	4.1250	32.4844	18.0879	27.4050	5914.3929	5932.4808
3	Web Plate	38.4750	31.5300	1213.1168	12150.5127	0.0000	0.0000	12150.5127
4	Cover Plate Top	12.0000	62.6850	752.2200	0.5625	31.1550	11647.6083	11648.1708
	Cover Plate Bottom	12.0000	0.3750	4.5000	0.5625	31.1550	11647.6083	11648.1708
<b>Total</b>		<b>96.23</b>		<b>3033.97</b>	<b>12188.66</b>		<b>51764.35</b>	<b>63953.01</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	31.5300 in	S <sub>top</sub> =	2028.32 in <sup>3</sup>	y-bar =	31.5300 in	S <sub>top</sub> =	2028.32 in <sup>3</sup>
I <sub>x</sub> =	63953.01 in <sup>4</sup>	S <sub>bott.</sub> =	2028.32 in <sup>3</sup>	I <sub>x</sub> =	63953.01 in <sup>4</sup>	S <sub>bott.</sub> =	2028.32 in <sup>3</sup>
C <sub>top</sub> =	31.5300 in	A =	96.2250 in <sup>2</sup>	C <sub>top</sub> =	31.5300 in	A =	96.2250 in <sup>2</sup>
C <sub>bottom</sub> =	31.5300 in	r <sub>x</sub> =	25.7802 in	C <sub>bottom</sub> =	31.5300 in	r <sub>x</sub> =	25.7802 in
J =	15.8379	Z =	2318.7690 in <sup>3</sup>	Z =	2318.7690		in <sup>3</sup>





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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
3	Web Plate	38.4750	8.0000	307.8000	1.2524	0.0000	0.0000	1.2524	
4	Top Cover Plate	12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000	
4	Bottom Cover Plate	12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000	
<b>Total</b>		<b>96.23</b>		<b>769.80</b>	<b>1079.99</b>		<b>204.95</b>	<b>1284.94</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	160.62	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	160.62	in <sup>3</sup>
I <sub>y</sub> =	1284.94	in <sup>4</sup>	S <sub>left</sub> =	160.62	in <sup>3</sup>	I <sub>y</sub> =	1284.94	in <sup>4</sup>	S <sub>left</sub> =	160.62	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	96.2250	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	96.2250	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.6542	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.6542	in

Non-composite Capacities*		
	AB	AI
M	6376.61 k-ft	6376.61 k-ft
V	736.41 k	736.41 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Checked By DMP

Date 3/21/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.5000$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

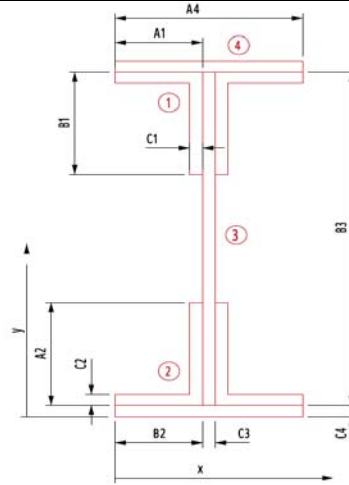
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.5000$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 35.0400$  in  
 $d_o = 38.7500$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in



**Girder 17-18 Section 1**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	6.0000	35.2900	211.7400	0.1250	17.2700	1789.5174	1789.6424
	Vertical Leg	5.5000	32.2900	177.5950	13.8646	14.2700	1119.9810	1133.8455
2	Horizontal Leg	6.0000	0.7500	4.5000	0.1250	17.2700	1789.5174	1789.6424
	Vertical Leg	5.5000	3.7500	20.6250	13.8646	14.2700	1119.9810	1133.8455
3	Web Plate	17.5200	18.0200	315.7104	1792.5903	0.0000	0.0000	1792.5903
4	Cover Plate Top	8.0000	35.7900	286.3200	0.1667	17.7700	2526.1832	2526.3499
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	17.7700	2526.1832	2526.3499
<b>Total</b>		<b>56.52</b>		<b>1018.49</b>	<b>1820.90</b>		<b>10871.36</b>	<b>12692.27</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	18.0200	in	S <sub>top</sub> =	704.34	in <sup>3</sup>	y-bar =	18.0200	in	S <sub>top</sub> =	704.34	in <sup>3</sup>
I <sub>x</sub> =	12692.27	in <sup>4</sup>	S <sub>bottom</sub> =	704.34	in <sup>3</sup>	I <sub>x</sub> =	12692.27	in <sup>4</sup>	S <sub>bottom</sub> =	704.34	in <sup>3</sup>
C <sub>top</sub> =	18.0200	in	A =	56.5200	in <sup>2</sup>	C <sub>top</sub> =	18.0200	in	A =	56.5200	in <sup>2</sup>
C <sub>bottom</sub> =	18.0200	in	r <sub>x</sub> =	14.9854	in	C <sub>bottom</sub> =	18.0200	in	r <sub>x</sub> =	14.9854	in
J =	4.7100		Z =	802.0052	in <sup>3</sup>	Z =	802.0052	in <sup>3</sup>			



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Checked By DMP

Date 3/21/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448
1 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448
2 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448
2 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448
3	Web Plate	17.5200	8.0000	140.1600	0.3650	0.0000	0.0000	0.3650
4	Cover Plate	16.0000	8.0000	128.0000	341.3333	0.0000	0.0000	341.3333
<b>Total</b>		<b>56.52</b>		<b>452.16</b>	<b>377.93</b>		<b>129.50</b>	<b>507.43</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	63.43	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	63.43	in <sup>3</sup>
I <sub>y</sub> =	507.43	in <sup>4</sup>	S <sub>left</sub> =	63.43	in <sup>3</sup>	I <sub>y</sub> =	507.43	in <sup>4</sup>	S <sub>left</sub> =	63.43	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	56.5200	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	56.5200	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.9963	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.9963	in

Non-composite Capacities*		
	AB	AI
M	2205.51 k-ft	2205.51 k-ft
V	335.33 k	335.33 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
------------------	-----------

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.5000$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

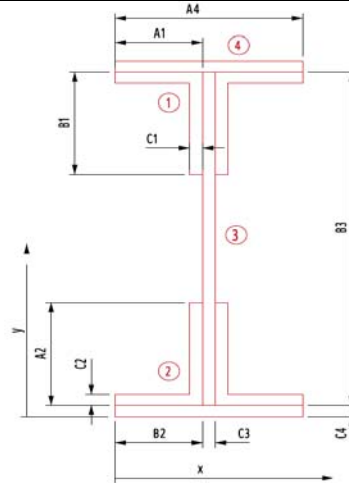
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.5000$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 36.8400$  in  
 $d_o = 55.0000$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in



**Girder 17-18 Section 2**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	6.0000	37.0900	222.5400	0.1250	18.1700	1980.8934	1981.0184
	Vertical Leg	5.5000	34.0900	187.4950	13.8646	15.1700	1265.7090	1279.5735
2	Horizontal Leg	6.0000	0.7500	4.5000	0.1250	18.1700	1980.8934	1981.0184
	Vertical Leg	5.5000	3.7500	20.6250	13.8646	15.1700	1265.7090	1279.5735
3	Web Plate	18.4200	18.9200	348.5064	2083.2799	0.0000	0.0000	2083.2799
4	Cover Plate Top	8.0000	37.5900	300.7200	0.1667	18.6700	2788.5512	2788.7179
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	18.6700	2788.5512	2788.7179
<b>Total</b>		<b>57.42</b>		<b>1086.39</b>	<b>2111.59</b>		<b>12070.31</b>	<b>14181.90</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	18.9200	in	S <sub>top</sub> = 749.57 in <sup>3</sup>	y-bar =	18.9200	in	S <sub>top</sub> = 749.57 in <sup>3</sup>
I <sub>x</sub> =	14181.90	n <sup>4</sup>	S <sub>bott.</sub> = 749.57 in <sup>3</sup>	I <sub>x</sub> =	14181.90	in <sup>4</sup>	S <sub>bott.</sub> = 749.57 in <sup>3</sup>
C <sub>top</sub> =	18.9200	in	A = 57.4200 in <sup>2</sup>	C <sub>top</sub> =	18.9200	in	A = 57.4200 in <sup>2</sup>
C <sub>bottom</sub> =	18.9200	in	r <sub>x</sub> = 15.7158 in	C <sub>bottom</sub> =	18.9200	in	r <sub>x</sub> = 15.7158 in
J =	4.7850		Z = 853.2782 in <sup>3</sup>				Z = 853.2782 in <sup>3</sup>



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Date 3/21/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448	
1 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448	
2 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448	
2 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448	
3	Web Plate	18.4200	8.0000	147.3600	0.3838	0.0000	0.0000	0.3838	
4	Cover Plate	16.0000	8.0000	128.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>57.42</b>		<b>459.36</b>	<b>377.95</b>		<b>129.50</b>	<b>507.45</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	63.43	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	63.43	in <sup>3</sup>
I <sub>y</sub> =	507.45	in <sup>4</sup>	S <sub>left</sub> =	63.43	in <sup>3</sup>	I <sub>y</sub> =	507.45	in <sup>4</sup>	S <sub>left</sub> =	63.43	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	57.4200	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	57.4200	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.9728	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.9728	in

Non-composite Capacities*		
	AB	AI
M	2346.52 k-ft	2346.52 k-ft
V	352.56 k	352.56 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
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AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.5000$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

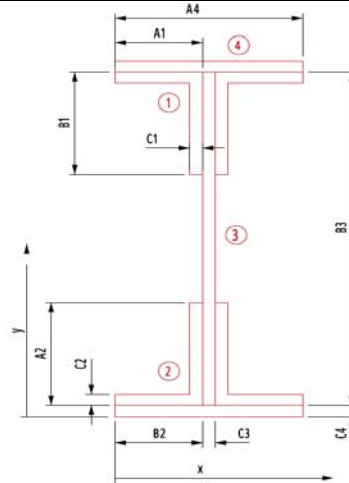
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.5000$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 41.4000$  in  
 $d_o = 55.0000$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in



**Girder 17-18 Section 3**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	6.0000	41.6500	249.9000	0.1250	20.4500	2509.2150	2509.3400
	Vertical Leg	5.5000	38.6500	212.5750	13.8646	17.4500	1674.7638	1688.6283
2	Horizontal Leg	6.0000	0.7500	4.5000	0.1250	20.4500	2509.2150	2509.3400
	Vertical Leg	5.5000	3.7500	20.6250	13.8646	17.4500	1674.7638	1688.6283
3	Web Plate	20.7000	21.2000	438.8400	2956.5810	0.0000	0.0000	2956.5810
4	Cover Plate Top	8.0000	42.1500	337.2000	0.1667	20.9500	3511.2200	3511.3867
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	20.9500	3511.2200	3511.3867
<b>Total</b>		<b>59.70</b>		<b>1265.64</b>	<b>2984.89</b>		<b>15390.40</b>	<b>18375.29</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	21.2000	in	S <sub>top</sub> = 866.76 in <sup>3</sup>	y-bar =	21.2000	in	S <sub>top</sub> = 866.76 in <sup>3</sup>
I <sub>x</sub> =	18375.29	n <sup>4</sup>	S <sub>bottom</sub> = 866.76 in <sup>3</sup>	I <sub>x</sub> =	18375.29	in <sup>4</sup>	S <sub>bottom</sub> = 866.76 in <sup>3</sup>
C <sub>top</sub> =	21.2000	in	A = 59.7000 in <sup>2</sup>	C <sub>top</sub> =	21.2000	in	A = 59.7000 in <sup>2</sup>
C <sub>bottom</sub> =	21.2000	in	r <sub>x</sub> = 17.5441 in	C <sub>bottom</sub> =	21.2000	in	r <sub>x</sub> = 17.5441 in
J =	4.9750		Z = 986.7950 in <sup>3</sup>				Z = 986.7950 in <sup>3</sup>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448
1 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448
2 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448
2 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448
3	Web Plate	20.7000	8.0000	165.6000	0.4313	0.0000	0.0000	0.4313
4	Cover Plate	16.0000	8.0000	128.0000	341.3333	0.0000	0.0000	341.3333
<b>Total</b>		<b>59.70</b>		<b>477.60</b>	<b>377.99</b>		<b>129.50</b>	<b>507.49</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	63.44	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	63.44	in <sup>3</sup>
I <sub>y</sub> =	507.49	in <sup>4</sup>	S <sub>left</sub> =	63.44	in <sup>3</sup>	I <sub>y</sub> =	507.49	in <sup>4</sup>	S <sub>left</sub> =	63.44	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	59.7000	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	59.7000	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.9156	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.9156	in

Non-composite Capacities*		
	AB	AI
M	2713.69 k-ft	2713.69 k-ft
V	396.20 k	396.20 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.5000$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

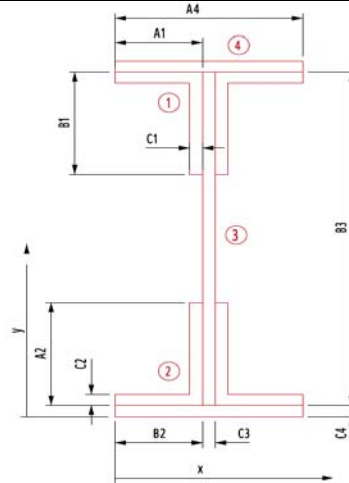
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.5000$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 45.7200$  in  
 $d_o = 41.4375$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in



**Girder 17-18 Section 4**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	6.0000	45.9700	275.8200	0.1250	22.6100	3067.2726	3067.3976
	Vertical Leg	5.5000	42.9700	236.3350	13.8646	19.6100	2115.0366	2128.9011
2	Horizontal Leg	6.0000	0.7500	4.5000	0.1250	22.6100	3067.2726	3067.3976
	Vertical Leg	5.5000	3.7500	20.6250	13.8646	19.6100	2115.0366	2128.9011
3	Web Plate	22.8600	23.3600	534.0096	3982.0566	0.0000	0.0000	3982.0566
4	Cover Plate Top	8.0000	46.4700	371.7600	0.1667	23.1100	4272.5768	4272.7435
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	23.1100	4272.5768	4272.7435
<b>Total</b>		<b>61.86</b>		<b>1445.05</b>	<b>4010.37</b>		<b>18909.77</b>	<b>22920.14</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	23.3600	in	S <sub>top</sub> =	981.17	in <sup>3</sup>	y-bar =	23.3600	in	S <sub>top</sub> =	981.17	in <sup>3</sup>
I <sub>x</sub> =	22920.14	n <sup>4</sup>	S <sub>bott.</sub> =	981.17	in <sup>3</sup>	I <sub>x</sub> =	22920.14	in <sup>4</sup>	S <sub>bott.</sub> =	981.17	in <sup>3</sup>
C <sub>top</sub> =	23.3600	in	A =	61.8600	in <sup>2</sup>	C <sub>top</sub> =	23.3600	in	A =	61.8600	in <sup>2</sup>
C <sub>bottom</sub> =	23.3600	in	r <sub>x</sub> =	19.2488	in	C <sub>bottom</sub> =	23.3600	in	r <sub>x</sub> =	19.2488	in
J =	5.1550		Z =	1118.0798	in <sup>3</sup>				Z =	1118.0798	in <sup>3</sup>





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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448
1 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448
2 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448
2 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448
3	Web Plate	22.8600	8.0000	182.8800	0.4763	0.0000	0.0000	0.4763
4	Cover Plate	16.0000	8.0000	128.0000	341.3333	0.0000	0.0000	341.3333
<b>Total</b>		<b>61.86</b>		<b>494.88</b>	<b>378.04</b>		<b>129.50</b>	<b>507.54</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	63.44	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	63.44	in <sup>3</sup>
I <sub>y</sub> =	507.54	in <sup>4</sup>	S <sub>left</sub> =	63.44	in <sup>3</sup>	I <sub>y</sub> =	507.54	in <sup>4</sup>	S <sub>left</sub> =	63.44	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	61.8600	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	61.8600	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.8644	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.8644	in

Non-composite Capacities*		
	AB	AI
M	3074.72 k-ft	3074.72 k-ft
V	437.54 k	437.54 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.5000$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

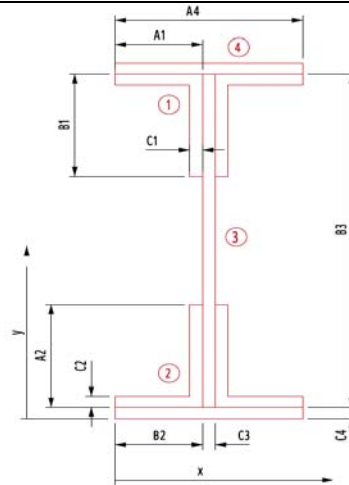
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.5000$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 54.8400$  in  
 $d_o = 50.0600$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in



**Girder 19-20 Section 1**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg		6.0000	55.0900	330.5400	0.1250	27.1700	4429.2534	4429.3784
	Vertical Leg		5.5000	52.0900	286.4950	13.8646	24.1700	3213.0390	3226.9035
2	Horizontal Leg		6.0000	0.7500	4.5000	0.1250	27.1700	4429.2534	4429.3784
	Vertical Leg		5.5000	3.7500	20.6250	13.8646	24.1700	3213.0390	3226.9035
3	Web Plate		27.4200	27.9200	765.5664	6871.9675	0.0000	0.0000	6871.9675
4	Cover Plate Top		8.0000	55.5900	444.7200	0.1667	27.6700	6125.0312	6125.1979
	Cover Plate Bottom		8.0000	0.2500	2.0000	0.1667	27.6700	6125.0312	6125.1979
<b>Total</b>			<b>66.42</b>		<b>1854.45</b>	<b>6900.28</b>		<b>27534.65</b>	<b>34434.93</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	27.9200 in	S <sub>top</sub> =	1233.34 in <sup>3</sup>	y-bar =	27.9200 in	S <sub>top</sub> =	1233.34 in <sup>3</sup>
I <sub>x</sub> =	34434.93 in <sup>4</sup>	S <sub>bottom</sub> =	1233.34 in <sup>3</sup>	I <sub>x</sub> =	34434.93 in <sup>4</sup>	S <sub>bottom</sub> =	1233.34 in <sup>3</sup>
C <sub>top</sub> =	27.9200 in	A =	66.4200 in <sup>2</sup>	C <sub>top</sub> =	27.9200 in	A =	66.4200 in <sup>2</sup>
C <sub>bottom</sub> =	27.9200 in	r <sub>x</sub> =	22.7693 in	C <sub>bottom</sub> =	27.9200 in	r <sub>x</sub> =	22.7693 in
J =	5.5350	Z =	1410.5582 in <sup>3</sup>			Z =	1410.5582 in <sup>3</sup>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448
1 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448
2 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448
2 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448
3	Web Plate	27.4200	8.0000	219.3600	0.5713	0.0000	0.0000	0.5713
4	Cover Plate	16.0000	8.0000	128.0000	341.3333	0.0000	0.0000	341.3333
<b>Total</b>		<b>66.42</b>		<b>531.36</b>	<b>378.13</b>		<b>129.50</b>	<b>507.63</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	63.45	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	63.45	in <sup>3</sup>
I <sub>y</sub> =	507.63	in <sup>4</sup>	S <sub>left</sub> =	63.45	in <sup>3</sup>	I <sub>y</sub> =	507.63	in <sup>4</sup>	S <sub>left</sub> =	63.45	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	66.4200	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	66.4200	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.7646	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.7646	in

Non-composite Capacities*		
	AB	AI
M	3879.04 k-ft	3879.04 k-ft
V	524.82 k	524.82 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.5000$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

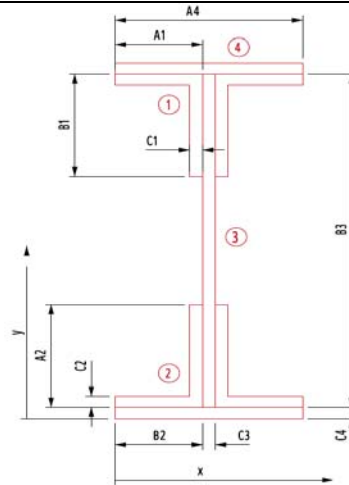
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.5000$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 48.8400$  in  
 $d_o = 48.0000$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in



**Girder 19-20 Section 2**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	6.0000	49.0900	294.5400	0.1250	24.1700	3505.1334	3505.2584
	Vertical Leg	5.5000	46.0900	253.4950	13.8646	21.1700	2464.9290	2478.7935
2	Horizontal Leg	6.0000	0.7500	4.5000	0.1250	24.1700	3505.1334	3505.2584
	Vertical Leg	5.5000	3.7500	20.6250	13.8646	21.1700	2464.9290	2478.7935
3	Web Plate	24.4200	24.9200	608.5464	4854.1783	0.0000	0.0000	4854.1783
4	Cover Plate Top	8.0000	49.5900	396.7200	0.1667	24.6700	4868.8712	4869.0379
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	24.6700	4868.8712	4869.0379
<b>Total</b>		<b>63.42</b>		<b>1580.43</b>	<b>4882.49</b>		<b>21677.87</b>	<b>26560.36</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	24.9200	in	S <sub>top</sub> =	1065.82	in <sup>3</sup>	y-bar =	24.9200	in	S <sub>top</sub> =	1065.82	in <sup>3</sup>
I <sub>x</sub> =	26560.36	n <sup>4</sup>	S <sub>bott.</sub> =	1065.82	in <sup>3</sup>	I <sub>x</sub> =	26560.36	in <sup>4</sup>	S <sub>bott.</sub> =	1065.82	in <sup>3</sup>
C <sub>top</sub> =	24.9200	in	A =	63.4200	in <sup>2</sup>	C <sub>top</sub> =	24.9200	in	A =	63.4200	in <sup>2</sup>
C <sub>bottom</sub> =	24.9200	in	r <sub>x</sub> =	20.4646	in	C <sub>bottom</sub> =	24.9200	in	r <sub>x</sub> =	20.4646	in
J =	5.2850		Z =	1215.7982	in <sup>3</sup>	Z =	1215.7982	in <sup>3</sup>			



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Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448
1 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448
2 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448
2 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448
3	Web Plate	24.4200	8.0000	195.3600	0.5088	0.0000	0.0000	0.5088
4	Cover Plate	16.0000	8.0000	128.0000	341.3333	0.0000	0.0000	341.3333
<b>Total</b>		<b>63.42</b>		<b>507.36</b>	<b>378.07</b>		<b>129.50</b>	<b>507.57</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	63.45	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	63.45	in <sup>3</sup>
I <sub>y</sub> =	507.57	in <sup>4</sup>	S <sub>left</sub> =	63.45	in <sup>3</sup>	I <sub>y</sub> =	507.57	in <sup>4</sup>	S <sub>left</sub> =	63.45	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	63.4200	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	63.4200	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.8290	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.8290	in

Non-composite Capacities*		
	AB	AI
M	3343.45 k-ft	3343.45 k-ft
V	467.40 k	467.40 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/21/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.5000$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

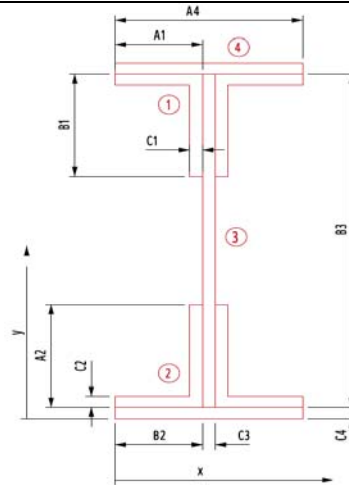
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.5000$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 56.5200$  in  
 $d_o = 45.1900$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in



**Girder 19-20 Section 3**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	6.0000	56.7700	340.6200	0.1250	28.0100	4707.3606	4707.4856
	Vertical Leg	5.5000	53.7700	295.7350	13.8646	25.0100	3440.2506	3454.1151
2	Horizontal Leg	6.0000	0.7500	4.5000	0.1250	28.0100	4707.3606	4707.4856
	Vertical Leg	5.5000	3.7500	20.6250	13.8646	25.0100	3440.2506	3454.1151
3	Web Plate	28.2600	28.7600	812.7576	7523.0720	0.0000	0.0000	7523.0720
4	Cover Plate Top	8.0000	57.2700	458.1600	0.1667	28.5100	6502.5608	6502.7275
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	28.5100	6502.5608	6502.7275
<b>Total</b>		<b>67.26</b>		<b>1934.40</b>	<b>7551.38</b>		<b>29300.34</b>	<b>36851.73</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	28.7600	in	S <sub>top</sub> =	1281.35	in <sup>3</sup>	y-bar =	28.7600	in	S <sub>top</sub> =	1281.35	in <sup>3</sup>
I <sub>x</sub> =	36851.73	n <sup>4</sup>	S <sub>bottom</sub> =	1281.35	in <sup>3</sup>	I <sub>x</sub> =	36851.73	in <sup>4</sup>	S <sub>bottom</sub> =	1281.35	in <sup>3</sup>
C <sub>top</sub> =	28.7600	in	A =	67.2600	in <sup>2</sup>	C <sub>top</sub> =	28.7600	in	A =	67.2600	in <sup>2</sup>
C <sub>bottom</sub> =	28.7600	in	r <sub>x</sub> =	23.4073	in	C <sub>bottom</sub> =	28.7600	in	r <sub>x</sub> =	23.4073	in
J =	5.6050		Z =	1466.7038	in <sup>3</sup>				Z =	1466.7038	in <sup>3</sup>



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Date 3/21/2012  
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Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448
1 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448
2 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448
2 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448
3	Web Plate	28.2600	8.0000	226.0800	0.5888	0.0000	0.0000	0.5888
4	Cover Plate	16.0000	8.0000	128.0000	341.3333	0.0000	0.0000	341.3333
<b>Total</b>		<b>67.26</b>		<b>538.08</b>	<b>378.15</b>		<b>129.50</b>	<b>507.65</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	63.46	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	63.46	in <sup>3</sup>
I <sub>y</sub> =	507.65	in <sup>4</sup>	S <sub>left</sub> =	63.46	in <sup>3</sup>	I <sub>y</sub> =	507.65	in <sup>4</sup>	S <sub>left</sub> =	63.46	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	67.2600	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	67.2600	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.7473	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.7473	in

Non-composite Capacities*		
	AB	AI
M	4033.44 k-ft	4033.44 k-ft
V	540.90 k	540.90 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
------------------	-----------

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

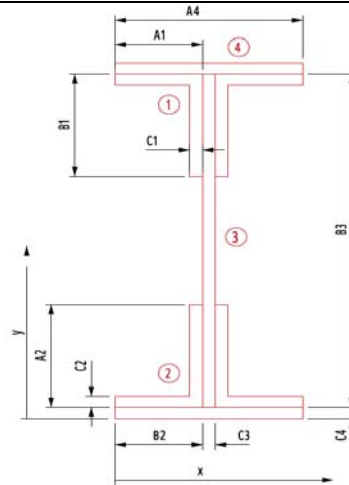
$C_3 = 0.5000$  in  
 $*B_3 = 57.0000$  in

$d_o = 55.5625$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 0.8750$  in  
 $A_4 = 16.0000$  in



**Girder 20-21 Section 1**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg		9.0000	57.5000	517.5000	0.4219	28.1250	7119.1406	7119.5625
	Vertical Leg		7.8750	54.5000	429.1875	18.0879	25.1250	4971.2168	4989.3047
2	Horizontal Leg		9.0000	1.2500	11.2500	0.4219	28.1250	7119.1406	7119.5625
	Vertical Leg		7.8750	4.2500	33.4688	18.0879	25.1250	4971.2168	4989.3047
3	Web Plate		28.5000	29.3750	837.1875	7716.3750	0.0000	0.0000	7716.3750
4	Cover Plate Top		14.0000	58.3125	816.3750	0.8932	28.9375	11723.3047	11724.1979
	Cover Plate Bottom		14.0000	0.4375	6.1250	0.8932	28.9375	11723.3047	11724.1979
<b>Total</b>			<b>90.25</b>		<b>2651.09</b>	<b>7755.18</b>		<b>47627.32</b>	<b>55382.51</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	29.3750	in	S <sub>top</sub> = 1885.36 in <sup>3</sup>	y-bar =	29.3750	in	S <sub>top</sub> = 1885.36 in <sup>3</sup>
I <sub>x</sub> =	55382.51	in <sup>4</sup>	S <sub>bottom</sub> = 1885.36 in <sup>3</sup>	I <sub>x</sub> =	55382.51	in <sup>4</sup>	S <sub>bottom</sub> = 1885.36 in <sup>3</sup>
C <sub>top</sub> =	29.3750	in	A = 90.2500 in <sup>2</sup>	C <sub>top</sub> =	29.3750	in	A = 90.2500 in <sup>2</sup>
C <sub>bottom</sub> =	29.3750	in	r <sub>x</sub> = 24.7721 in	C <sub>bottom</sub> =	29.3750	in	r <sub>x</sub> = 24.7721 in
J =	15.8490		Z = 2118.3438 in <sup>3</sup>				Z = 2118.3438 in <sup>3</sup>





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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
3	Web Plate	28.5000	8.0000	228.0000	0.5938	0.0000	0.0000	0.5938
4	Cover Plate	28.0000	8.0000	224.0000	597.3333	0.0000	0.0000	597.3333
<b>Total</b>		<b>90.25</b>		<b>722.00</b>	<b>652.67</b>		<b>196.28</b>	<b>848.94</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	106.12	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	106.12	in <sup>3</sup>
I <sub>y</sub> =	848.94	in <sup>4</sup>	S <sub>left</sub> =	106.12	in <sup>3</sup>	I <sub>y</sub> =	848.94	in <sup>4</sup>	S <sub>left</sub> =	106.12	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	90.2500	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	90.2500	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.0670	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.0670	in

Non-composite Capacities*		
	AB	AI
M	5825.45 k-ft	5825.45 k-ft
V	545.49 k	545.49 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

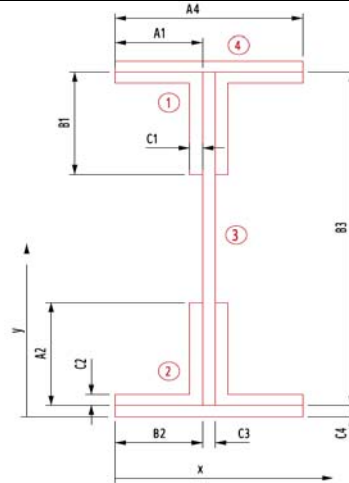
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 52.8000$  in  
 $d_o = 50.0000$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 0.8750$  in  
 $A_4 = 16.0000$  in



**Girder 20-21 Section 2**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	53.3000	479.7000	0.4219	26.0250	6095.7056	6096.1275
	Vertical Leg	7.8750	50.3000	396.1125	18.0879	23.0250	4174.9362	4193.0241
2	Horizontal Leg	9.0000	1.2500	11.2500	0.4219	26.0250	6095.7056	6096.1275
	Vertical Leg	7.8750	4.2500	33.4688	18.0879	23.0250	4174.9362	4193.0241
3	Web Plate	26.4000	27.2750	720.0600	6133.2480	0.0000	0.0000	6133.2480
4	Cover Plate Top	14.0000	54.1125	757.5750	0.8932	26.8375	10083.5197	10084.4129
	Cover Plate Bottom	14.0000	0.4375	6.1250	0.8932	26.8375	10083.5197	10084.4129
<b>Total</b>		<b>88.15</b>		<b>2404.29</b>	<b>6172.05</b>		<b>40708.32</b>	<b>46880.38</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	27.2750	in	$S_{top} = 1718.80$	in <sup>3</sup>	y-bar =	27.2750	in	$S_{top} = 1718.80$	in <sup>3</sup>		
$I_x =$	46880.38	n <sup>4</sup>	$S_{bott.} = 1718.80$	in <sup>3</sup>	$I_x =$	46880.38	in <sup>4</sup>	$S_{bott.} = 1718.80$	in <sup>3</sup>		
$C_{top} =$	27.2750	in	A =	88.1500	in <sup>2</sup>	$C_{top} =$	27.2750	in	A =	88.1500	in <sup>2</sup>
$C_{bottom} =$	27.2750	in	$r_x =$	23.0613	in	$C_{bottom} =$	27.2750	in	$r_x =$	23.0613	in
J =	15.6740		Z =	1931.0238	in <sup>3</sup>				Z =	1931.0238	in <sup>3</sup>



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Date 3/23/2012  
 Date 4/2/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
3	Web Plate	26.4000	8.0000	211.2000	0.5500	0.0000	0.0000	0.5500
4	Cover Plate	28.0000	8.0000	224.0000	597.3333	0.0000	0.0000	597.3333
<b>Total</b>		<b>88.15</b>		<b>705.20</b>	<b>652.62</b>		<b>196.28</b>	<b>848.90</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	106.11	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	106.11	in <sup>3</sup>
I <sub>y</sub> =	848.90	in <sup>4</sup>	S <sub>left</sub> =	106.11	in <sup>3</sup>	I <sub>y</sub> =	848.90	in <sup>4</sup>	S <sub>left</sub> =	106.11	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	88.1500	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	88.1500	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.1033	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.1033	in

Non-composite Capacities*		
	AB	AI
M	5310.32 k-ft	5310.32 k-ft
V	505.30 k	505.30 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
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AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

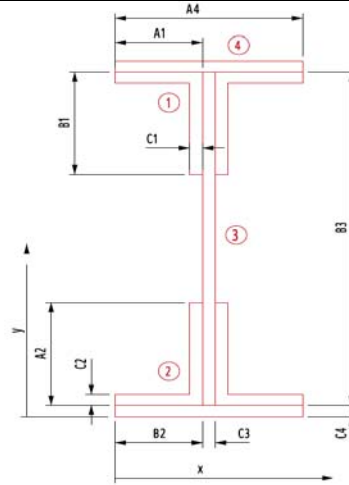
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 49.2000$  in  
 $d_o = 50.0000$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 1.7500$  in  
 $A_4 = 16.0000$  in



**Girder 20-21 Section 3**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg		9.0000	50.5750	455.1750	0.4219	24.2250	5281.6556	5282.0775
	Vertical Leg		7.8750	47.5750	374.6531	18.0879	21.2250	3547.6924	3565.7803
2	Horizontal Leg		9.0000	2.1250	19.1250	0.4219	24.2250	5281.6556	5282.0775
	Vertical Leg		7.8750	5.1250	40.3594	18.0879	21.2250	3547.6924	3565.7803
3	Web Plate		24.6000	26.3500	648.2100	4962.3120	0.0000	0.0000	4962.3120
4	Cover Plate Top		28.0000	51.8250	1451.1000	7.1458	25.4750	18171.3175	18178.4633
	Cover Plate Bottom		28.0000	0.8750	24.5000	7.1458	25.4750	18171.3175	18178.4633
<b>Total</b>			<b>114.35</b>		<b>3013.12</b>	<b>5013.62</b>		<b>54001.33</b>	<b>59014.95</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	26.3500	in	S <sub>top</sub> = 2239.66 in <sup>3</sup>	y-bar =	26.3500	in	S <sub>top</sub> = 2239.66 in <sup>3</sup>
I <sub>x</sub> =	59014.95	n <sup>4</sup>	S <sub>bottom</sub> = 2239.66 in <sup>3</sup>	I <sub>x</sub> =	59014.95	in <sup>4</sup>	S <sub>bottom</sub> = 2239.66 in <sup>3</sup>
C <sub>top</sub> =	26.3500	in	A = 114.3500 in <sup>2</sup>	C <sub>top</sub> =	26.3500	in	A = 114.3500 in <sup>2</sup>
C <sub>bottom</sub> =	26.3500	in	r <sub>x</sub> = 22.7176 in	C <sub>bottom</sub> =	26.3500	in	r <sub>x</sub> = 22.7176 in
J =	65.5448		Z = 2499.5238 in <sup>3</sup>				Z = 2499.5238 in <sup>3</sup>



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Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	24.6000	8.0000	196.8000	0.5125	0.0000	0.0000	0.5125	
4	Cover Plate	56.0000	8.0000	448.0000	1194.6667	0.0000	0.0000	1194.6667	
<b>Total</b>		<b>114.35</b>		<b>914.80</b>	<b>1249.92</b>		<b>196.28</b>	<b>1446.19</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	180.77	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	180.77	in <sup>3</sup>
I <sub>y</sub> =	1446.19	in <sup>4</sup>	S <sub>left</sub> =	180.77	in <sup>3</sup>	I <sub>y</sub> =	1446.19	in <sup>4</sup>	S <sub>left</sub> =	180.77	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	114.3500	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	114.3500	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5563	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5563	in

Non-composite Capacities*		
	AB	AI
M	6873.69 k-ft	6873.69 k-ft
V	470.84 k	470.84 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
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AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

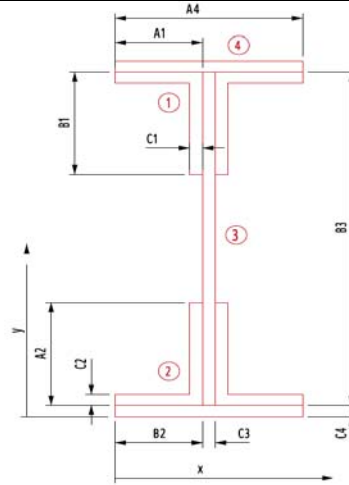
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 50.0400$  in  
 $d_o = 52.0000$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 1.7500$  in  
 $A_4 = 16.0000$  in



**Girder 20-21 Section 4**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	51.4150	462.7350	0.4219	24.6450	5466.3842	5466.8061
	Vertical Leg	7.8750	48.4150	381.2681	18.0879	21.6450	3689.4849	3707.5728
2	Horizontal Leg	9.0000	2.1250	19.1250	0.4219	24.6450	5466.3842	5466.8061
	Vertical Leg	7.8750	5.1250	40.3594	18.0879	21.6450	3689.4849	3707.5728
3	Web Plate	25.0200	26.7700	669.7854	5220.8433	0.0000	0.0000	5220.8433
4	Cover Plate Top	28.0000	52.6650	1474.6200	7.1458	25.8950	18775.4287	18782.5745
	Cover Plate Bottom	28.0000	0.8750	24.5000	7.1458	25.8950	18775.4287	18782.5745
<b>Total</b>		<b>114.77</b>		<b>3072.39</b>	<b>5272.15</b>		<b>55862.60</b>	<b>61134.75</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	26.7700	in	$S_{top} = 2283.70$	in <sup>3</sup>	y-bar =	26.7700	in	$S_{top} = 2283.70$	in <sup>3</sup>		
$I_x =$	61134.75	in <sup>4</sup>	$S_{bott.} = 2283.70$	in <sup>3</sup>	$I_x =$	61134.75	in <sup>4</sup>	$S_{bott.} = 2283.70$	in <sup>3</sup>		
$C_{top} =$	26.7700	in	A =	114.7700	in <sup>2</sup>	$C_{top} =$	26.7700	in	A =	114.7700	in <sup>2</sup>
$C_{bottom} =$	26.7700	in	$r_x =$	23.0797	in	$C_{bottom} =$	26.7700	in	$r_x =$	23.0797	in
J =	65.5798		Z =	2547.6390	in <sup>3</sup>				Z =	2547.6390	in <sup>3</sup>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
3	Web Plate	25.0200	8.0000	200.1600	0.5213	0.0000	0.0000	0.5213
4	Cover Plate	56.0000	8.0000	448.0000	1194.6667	0.0000	0.0000	1194.6667
<b>Total</b>		<b>114.77</b>		<b>918.16</b>	<b>1249.93</b>		<b>196.28</b>	<b>1446.20</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	180.78	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	180.78	in <sup>3</sup>
I <sub>y</sub> =	1446.20	in <sup>4</sup>	S <sub>left</sub> =	180.78	in <sup>3</sup>	I <sub>y</sub> =	1446.20	in <sup>4</sup>	S <sub>left</sub> =	180.78	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	114.7700	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	114.7700	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5498	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5498	in

Non-composite Capacities*		
	AB	AI
M	7006.01 k-ft	7006.01 k-ft
V	478.88 k	478.88 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

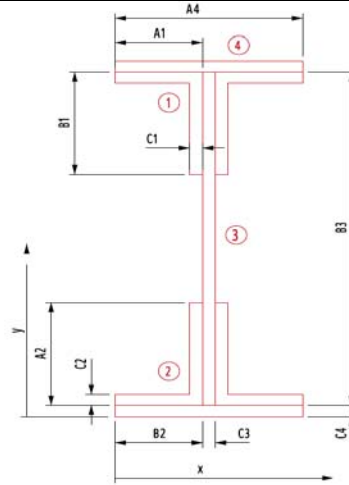
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 54.9600$  in  
 $d_o = 54.0000$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 0.8750$  in  
 $A_4 = 16.0000$  in



**Girder 20-21 Section 5**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg		9.0000	55.4600	499.1400	0.4219	27.1050	6612.1292	6612.5511
	Vertical Leg		7.8750	52.4600	413.1225	18.0879	24.1050	4575.7768	4593.8647
2	Horizontal Leg		9.0000	1.2500	11.2500	0.4219	27.1050	6612.1292	6612.5511
	Vertical Leg		7.8750	4.2500	33.4688	18.0879	24.1050	4575.7768	4593.8647
3	Web Plate		27.4800	28.3550	779.1954	6917.1777	0.0000	0.0000	6917.1777
4	Cover Plate Top		14.0000	56.2725	787.8150	0.8932	27.9175	10911.4153	10912.3085
	Cover Plate Bottom		14.0000	0.4375	6.1250	0.8932	27.9175	10911.4153	10912.3085
<b>Total</b>			<b>89.23</b>		<b>2530.12</b>	<b>6955.98</b>		<b>44198.64</b>	<b>51154.63</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	28.3550	in	S <sub>top</sub> =	1804.08	in <sup>3</sup>	y-bar =	28.3550	in	S <sub>top</sub> =	1804.08	in <sup>3</sup>
I <sub>x</sub> =	51154.63	n <sup>4</sup>	S <sub>bott.</sub> =	1804.08	in <sup>3</sup>	I <sub>x</sub> =	51154.63	in <sup>4</sup>	S <sub>bott.</sub> =	1804.08	in <sup>3</sup>
C <sub>top</sub> =	28.3550	in	A =	89.2300	in <sup>2</sup>	C <sub>top</sub> =	28.3550	in	A =	89.2300	in <sup>2</sup>
C <sub>bottom</sub> =	28.3550	in	r <sub>x</sub> =	23.9435	in	C <sub>bottom</sub> =	28.3550	in	r <sub>x</sub> =	23.9435	in
J =	15.7640		Z =	2026.8090	in <sup>3</sup>				Z =	2026.8090	in <sup>3</sup>





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Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	27.4800	8.0000	219.8400	0.5725	0.0000	0.0000	0.5725	
4	Cover Plate	28.0000	8.0000	224.0000	597.3333	0.0000	0.0000	597.3333	
<b>Total</b>		<b>89.23</b>		<b>713.84</b>	<b>652.64</b>		<b>196.28</b>	<b>848.92</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	106.12	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	106.12	in <sup>3</sup>
I <sub>y</sub> =	848.92	in <sup>4</sup>	S <sub>left</sub> =	106.12	in <sup>3</sup>	I <sub>y</sub> =	848.92	in <sup>4</sup>	S <sub>left</sub> =	106.12	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	89.2300	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	89.2300	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.0845	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.0845	in

Non-composite Capacities*		
	AB	AI
M	5573.72 k-ft	5573.72 k-ft
V	525.97 k	525.97 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
------------------	-----------

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

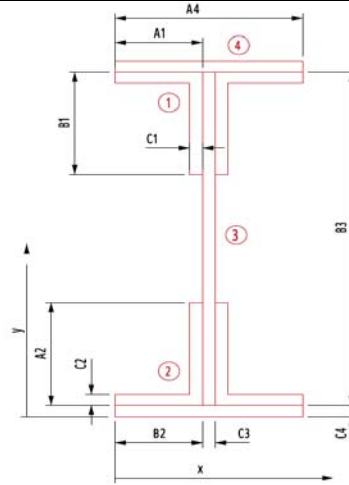
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 59.2800$  in  
 $d_o = 59.0000$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 0.8750$  in  
 $A_4 = 16.0000$  in



**Girder 20-21 Section 6**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg		9.0000	59.7800	538.0200	0.4219	29.2650	7707.9620	7708.3839
	Vertical Leg		7.8750	56.7800	447.1425	18.0879	26.2650	5432.5705	5450.6584
2	Horizontal Leg		9.0000	1.2500	11.2500	0.4219	29.2650	7707.9620	7708.3839
	Vertical Leg		7.8750	4.2500	33.4688	18.0879	26.2650	5432.5705	5450.6584
3	Web Plate		29.6400	30.5150	904.4646	8679.8724	0.0000	0.0000	8679.8724
4	Cover Plate Top		14.0000	60.5925	848.2950	0.8932	30.0775	12665.1841	12666.0773
	Cover Plate Bottom		14.0000	0.4375	6.1250	0.8932	30.0775	12665.1841	12666.0773
<b>Total</b>			<b>91.39</b>		<b>2788.77</b>	<b>8718.68</b>		<b>51611.43</b>	<b>60330.11</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	30.5150	in	S <sub>top</sub> = 1977.06 in <sup>3</sup>	y-bar =	30.5150	in	S <sub>top</sub> = 1977.06 in <sup>3</sup>
I <sub>x</sub> =	60330.11	n <sup>4</sup>	S <sub>bott.</sub> = 1977.06 in <sup>3</sup>	I <sub>x</sub> =	60330.11	in <sup>4</sup>	S <sub>bott.</sub> = 1977.06 in <sup>3</sup>
C <sub>top</sub> =	30.5150	in	A = 91.3900 in <sup>2</sup>	C <sub>top</sub> =	30.5150	in	A = 91.3900 in <sup>2</sup>
C <sub>bottom</sub> =	30.5150	in	r <sub>x</sub> = 25.6932 in	C <sub>bottom</sub> =	30.5150	in	r <sub>x</sub> = 25.6932 in
J =	15.9440		Z = 2221.8786 in <sup>3</sup>				Z = 2221.8786 in <sup>3</sup>



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Date 3/23/2012  
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Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
3	Web Plate	29.6400	8.0000	237.1200	0.6175	0.0000	0.0000	0.6175
4	Cover Plate	28.0000	8.0000	224.0000	597.3333	0.0000	0.0000	597.3333
<b>Total</b>		<b>91.39</b>		<b>731.12</b>	<b>652.69</b>		<b>196.28</b>	<b>848.97</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	106.12	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	106.12	in <sup>3</sup>
I <sub>y</sub> =	848.97	in <sup>4</sup>	S <sub>left</sub> =	106.12	in <sup>3</sup>	I <sub>y</sub> =	848.97	in <sup>4</sup>	S <sub>left</sub> =	106.12	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	91.3900	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	91.3900	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.0479	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.0479	in

Non-composite Capacities*		
	AB	AI
M	6110.17 k-ft	6110.17 k-ft
V	567.31 k	567.31 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

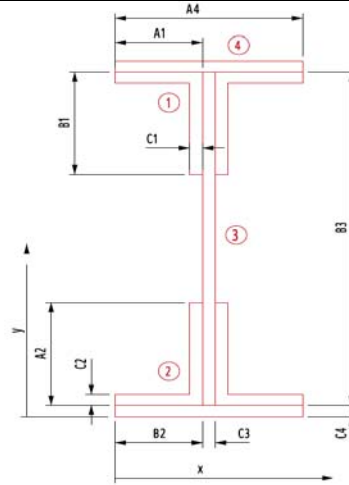
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 63.2400$  in  
 $d_o = 59.5000$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 0.8750$  in  
 $A_4 = 16.0000$  in



**Girder 20-21 Section 7**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	63.7400	573.6600	0.4219	31.2450	8786.2502	8786.6721
	Vertical Leg	7.8750	60.7400	478.3275	18.0879	28.2450	6282.5177	6300.6056
2	Horizontal Leg	9.0000	1.2500	11.2500	0.4219	31.2450	8786.2502	8786.6721
	Vertical Leg	7.8750	4.2500	33.4688	18.0879	28.2450	6282.5177	6300.6056
3	Web Plate	31.6200	32.4950	1027.4919	10538.1492	0.0000	0.0000	10538.1492
4	Cover Plate Top	14.0000	64.5525	903.7350	0.8932	32.0575	14387.5663	14388.4595
	Cover Plate Bottom	14.0000	0.4375	6.1250	0.8932	32.0575	14387.5663	14388.4595
<b>Total</b>		<b>93.37</b>		<b>3034.06</b>	<b>10576.96</b>		<b>58912.67</b>	<b>69489.62</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	32.4950	in	S <sub>top</sub> =	2138.47	in <sup>3</sup>	y-bar =	32.4950	in	S <sub>top</sub> =	2138.47	in <sup>3</sup>
I <sub>x</sub> =	69489.62	n <sup>4</sup>	S <sub>bott.</sub> =	2138.47	in <sup>3</sup>	I <sub>x</sub> =	69489.62	in <sup>4</sup>	S <sub>bott.</sub> =	2138.47	in <sup>3</sup>
C <sub>top</sub> =	32.4950	in	A =	93.3700	in <sup>2</sup>	C <sub>top</sub> =	32.4950	in	A =	93.3700	in <sup>2</sup>
C <sub>bottom</sub> =	32.4950	in	r <sub>x</sub> =	27.2807	in	C <sub>bottom</sub> =	32.4950	in	r <sub>x</sub> =	27.2807	in
J =	16.1090		Z =	2404.7910	in <sup>3</sup>				Z =	2404.7910	in <sup>3</sup>



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
3	Web Plate	31.6200	8.0000	252.9600	0.6588	0.0000	0.0000	0.6588
4	Cover Plate	28.0000	8.0000	224.0000	597.3333	0.0000	0.0000	597.3333
<b>Total</b>		<b>93.37</b>		<b>746.96</b>	<b>652.73</b>		<b>196.28</b>	<b>849.01</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	106.13	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	106.13	in <sup>3</sup>
I <sub>y</sub> =	849.01	in <sup>4</sup>	S <sub>left</sub> =	106.13	in <sup>3</sup>	I <sub>y</sub> =	849.01	in <sup>4</sup>	S <sub>left</sub> =	106.13	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	93.3700	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	93.3700	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.0155	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.0155	in

Non-composite Capacities*		
	AB	AI
M	6613.18 k-ft	6613.18 k-ft
V	605.21 k	605.21 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/23/2012  
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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

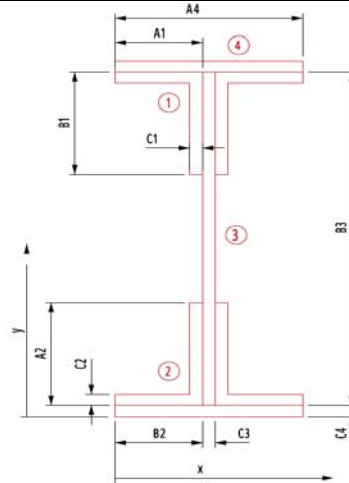
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 61.9200$  in  
 $d_o = 69.1250$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 0.6250$  in  
 $A_4 = 16.0000$  in



**Girder 21-22 Section 1**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg		9.0000	62.1700	559.5300	0.4219	30.5850	8418.9800	8419.4019
	Vertical Leg		7.8750	59.1700	465.9638	18.0879	27.5850	5992.3413	6010.4292
2	Horizontal Leg		9.0000	1.0000	9.0000	0.4219	30.5850	8418.9800	8419.4019
	Vertical Leg		7.8750	4.0000	31.5000	18.0879	27.5850	5992.3413	6010.4292
3	Web Plate		30.9600	31.5850	977.8716	9891.9429	0.0000	0.0000	9891.9429
4	Cover Plate Top		10.0000	62.8575	628.5750	0.3255	31.2725	9779.6926	9780.0181
	Cover Plate Bottom		10.0000	0.3125	3.1250	0.3255	31.2725	9779.6926	9780.0181
<b>Total</b>			<b>84.71</b>		<b>2675.57</b>	<b>9929.61</b>		<b>48382.03</b>	<b>58311.64</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	31.5850	in	S <sub>top</sub> = 1846.18 in <sup>3</sup>	y-bar =	31.5850	in	S <sub>top</sub> = 1846.18 in <sup>3</sup>
I <sub>x</sub> =	58311.64	n <sup>4</sup>	S <sub>bottom</sub> = 1846.18 in <sup>3</sup>	I <sub>x</sub> =	58311.64	in <sup>4</sup>	S <sub>bottom</sub> = 1846.18 in <sup>3</sup>
C <sub>top</sub> =	31.5850	in	A = 84.7100 in <sup>2</sup>	C <sub>top</sub> =	31.5850	in	A = 84.7100 in <sup>2</sup>
C <sub>bottom</sub> =	31.5850	in	r <sub>x</sub> = 26.2368 in	C <sub>bottom</sub> =	31.5850	in	r <sub>x</sub> = 26.2368 in
J =	11.5123		Z = 2089.7046 in <sup>3</sup>				Z = 2089.7046 in <sup>3</sup>



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	30.9600	8.0000	247.6800	0.6450	0.0000	0.0000	0.6450	
4	Cover Plate	20.0000	8.0000	160.0000	426.6667	0.0000	0.0000	426.6667	
<b>Total</b>		<b>84.71</b>		<b>677.68</b>	<b>482.05</b>		<b>196.28</b>	<b>678.33</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	84.79	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	84.79	in <sup>3</sup>
I <sub>y</sub> =	678.33	in <sup>4</sup>	S <sub>left</sub> =	84.79	in <sup>3</sup>	I <sub>y</sub> =	678.33	in <sup>4</sup>	S <sub>left</sub> =	84.79	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	84.7100	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	84.7100	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.8298	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.8298	in

Non-composite Capacities*		
	AB	AI
M	5746.69 k-ft	5746.69 k-ft
V	588.50 k	588.50 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
------------------	-----------

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

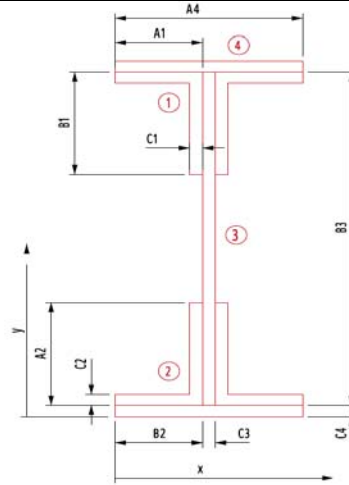
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 56.7600$  in  
 $d_o = 50.0000$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 0.6250$  in  
 $A_4 = 16.0000$  in



Girder 21-22 Section 2

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg		9.0000	57.0100	513.0900	0.4219	28.0050	7058.5202	7058.9421
	Vertical Leg		7.8750	54.0100	425.3288	18.0879	25.0050	4923.8439	4941.9318
2	Horizontal Leg		9.0000	1.0000	9.0000	0.4219	28.0050	7058.5202	7058.9421
	Vertical Leg		7.8750	4.0000	31.5000	18.0879	25.0050	4923.8439	4941.9318
3	Web Plate		28.3800	29.0050	823.1619	7619.3148	0.0000	0.0000	7619.3148
4	Cover Plate Top		10.0000	57.6975	576.9750	0.3255	28.6925	8232.5956	8232.9211
	Cover Plate Bottom		10.0000	0.3125	3.1250	0.3255	28.6925	8232.5956	8232.9211
<b>Total</b>			<b>82.13</b>		<b>2382.18</b>	<b>7656.99</b>		<b>40429.92</b>	<b>48086.90</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	29.0050	in	S <sub>top</sub> = 1657.88 in <sup>3</sup>	y-bar =	29.0050	in	S <sub>top</sub> = 1657.88 in <sup>3</sup>
I <sub>x</sub> =	48086.90	n <sup>4</sup>	S <sub>bott.</sub> = 1657.88 in <sup>3</sup>	I <sub>x</sub> =	48086.90	in <sup>4</sup>	S <sub>bott.</sub> = 1657.88 in <sup>3</sup>
C <sub>top</sub> =	29.0050	in	A = 82.1300 in <sup>2</sup>	C <sub>top</sub> =	29.0050	in	A = 82.1300 in <sup>2</sup>
C <sub>bottom</sub> =	29.0050	in	r <sub>x</sub> = 24.1971 in	C <sub>bottom</sub> =	29.0050	in	r <sub>x</sub> = 24.1971 in
J =	11.2973		Z = 1874.4810 in <sup>3</sup>				Z = 1874.4810 in <sup>3</sup>





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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
3	Web Plate	28.3800	8.0000	227.0400	0.5913	0.0000	0.0000	0.5913
4	Cover Plate	20.0000	8.0000	160.0000	426.6667	0.0000	0.0000	426.6667
<b>Total</b>		<b>82.13</b>		<b>657.04</b>	<b>482.00</b>		<b>196.28</b>	<b>678.27</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	84.78	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	84.78	in <sup>3</sup>
I <sub>y</sub> =	678.27	in <sup>4</sup>	S <sub>left</sub> =	84.78	in <sup>3</sup>	I <sub>y</sub> =	678.27	in <sup>4</sup>	S <sub>left</sub> =	84.78	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	82.1300	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	82.1300	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.8738	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.8738	in

Non-composite Capacities*		
	AB	AI
M	5154.82 k-ft	5154.82 k-ft
V	543.19 k	543.19 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

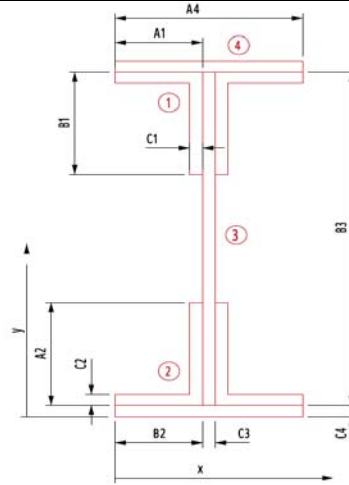
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 52.3200$  in  
 $d_o = 50.0000$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 1.2500$  in  
 $A_4 = 16.0000$  in



**Girder 21-22 Section 3**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	53.1950	478.7550	0.4219	25.7850	5983.7960	5984.2179
	Vertical Leg	7.8750	50.1950	395.2856	18.0879	22.7850	4088.3553	4106.4432
2	Horizontal Leg	9.0000	1.6250	14.6250	0.4219	25.7850	5983.7960	5984.2179
	Vertical Leg	7.8750	4.6250	36.4219	18.0879	22.7850	4088.3553	4106.4432
3	Web Plate	26.1600	27.4100	717.0456	5967.4936	0.0000	0.0000	5967.4936
4	Cover Plate Top	20.0000	54.1950	1083.9000	2.6042	26.7850	14348.7245	14351.3287
	Cover Plate Bottom	20.0000	0.6250	12.5000	2.6042	26.7850	14348.7245	14351.3287
<b>Total</b>		<b>99.91</b>		<b>2738.53</b>	<b>6009.72</b>		<b>48841.75</b>	<b>54851.47</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	27.4100	in	S <sub>top</sub> =	2001.15	in <sup>3</sup>	y-bar =	27.4100	in	S <sub>top</sub> =	2001.15	in <sup>3</sup>
I <sub>x</sub> =	54851.47	in <sup>4</sup>	S <sub>bottom</sub> =	2001.15	in <sup>3</sup>	I <sub>x</sub> =	54851.47	in <sup>4</sup>	S <sub>bottom</sub> =	2001.15	in <sup>3</sup>
C <sub>top</sub> =	27.4100	in	A =	99.9100	in <sup>2</sup>	C <sub>top</sub> =	27.4100	in	A =	99.9100	in <sup>2</sup>
C <sub>bottom</sub> =	27.4100	in	r <sub>x</sub> =	23.4309	in	C <sub>bottom</sub> =	27.4100	in	r <sub>x</sub> =	23.4309	in
J =	29.3415	in <sup>3</sup>	Z =	2236.5666	in <sup>3</sup>	J =	29.3415	in <sup>3</sup>	Z =	2236.5666	in <sup>3</sup>



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Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
3	Web Plate	26.1600	8.0000	209.2800	0.5450	0.0000	0.0000	0.5450
4	Cover Plate	40.0000	8.0000	320.0000	853.3333	0.0000	0.0000	853.3333
<b>Total</b>		<b>99.91</b>		<b>799.28</b>	<b>908.62</b>		<b>196.28</b>	<b>1104.89</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	138.11	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	138.11	in <sup>3</sup>
I <sub>y</sub> =	1104.89	in <sup>4</sup>	S <sub>left</sub> =	138.11	in <sup>3</sup>	I <sub>y</sub> =	1104.89	in <sup>4</sup>	S <sub>left</sub> =	138.11	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	99.9100	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	99.9100	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.3255	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.3255	in

Non-composite Capacities*		
	AB	AI
M	6150.56 k-ft	6150.56 k-ft
V	500.70 k	500.70 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
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AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

**Top Angles:**

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

**Bottom Angles:**

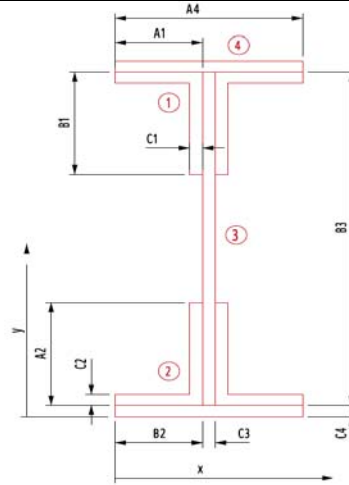
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

**Web Plate:**

$C_3 = 0.5000$  in  
 $*B_3 = 49.3200$  in  
 $d_o = 48.0000$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

**Cover Plate:**

$C_4 = 1.2500$  in  
 $A_4 = 16.0000$  in



**Girder 21-22 Section 4**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg		9.0000	50.1950	451.7550	0.4219	24.2850	5307.8510	5308.2729
	Vertical Leg		7.8750	47.1950	371.6606	18.0879	21.2850	3567.7784	3585.8663
2	Horizontal Leg		9.0000	1.6250	14.6250	0.4219	24.2850	5307.8510	5308.2729
	Vertical Leg		7.8750	4.6250	36.4219	18.0879	21.2850	3567.7784	3585.8663
3	Web Plate		24.6600	25.9100	638.9406	4998.7102	0.0000	0.0000	4998.7102
4	Cover Plate Top		20.0000	51.1950	1023.9000	2.6042	25.2850	12786.6245	12789.2287
	Cover Plate Bottom		20.0000	0.6250	12.5000	2.6042	25.2850	12786.6245	12789.2287
<b>Total</b>			<b>98.41</b>		<b>2549.80</b>	<b>5040.94</b>		<b>43324.51</b>	<b>48365.45</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	25.9100 in	S <sub>top</sub> =	1866.67 in <sup>3</sup>	y-bar =	25.9100 in	S <sub>top</sub> =	1866.67 in <sup>3</sup>
I <sub>x</sub> =	48365.45 in <sup>4</sup>	S <sub>bottom</sub> =	1866.67 in <sup>3</sup>	I <sub>x</sub> =	48365.45 in <sup>4</sup>	S <sub>bottom</sub> =	1866.67 in <sup>3</sup>
C <sub>top</sub> =	25.9100 in	A =	98.4100 in <sup>2</sup>	C <sub>top</sub> =	25.9100 in	A =	98.4100 in <sup>2</sup>
C <sub>bottom</sub> =	25.9100 in	r <sub>x</sub> =	22.1691 in	C <sub>bottom</sub> =	25.9100 in	r <sub>x</sub> =	22.1691 in
J =	29.2165	Z =	2087.8266 in <sup>3</sup>	Z =	2087.8266		in <sup>3</sup>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
3	Web Plate	24.6600	8.0000	197.2800	0.5138	0.0000	0.0000	0.5138
4	Cover Plate	40.0000	8.0000	320.0000	853.3333	0.0000	0.0000	853.3333
<b>Total</b>		<b>98.41</b>		<b>787.28</b>	<b>908.59</b>		<b>196.28</b>	<b>1104.86</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	138.11	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	138.11	in <sup>3</sup>
I <sub>y</sub> =	1104.86	in <sup>4</sup>	S <sub>left</sub> =	138.11	in <sup>3</sup>	I <sub>y</sub> =	1104.86	in <sup>4</sup>	S <sub>left</sub> =	138.11	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	98.4100	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	98.4100	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.3507	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.3507	in

Non-composite Capacities*		
	AB	AI
M	5741.52 k-ft	5741.52 k-ft
V	471.99 k	471.99 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
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AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

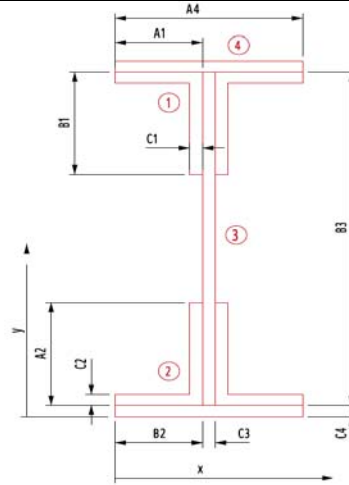
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 52.3200$  in  
 $d_o = 50.0000$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 1.2500$  in  
 $A_4 = 16.0000$  in



**Girder 21-22 Section 5**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	53.1950	478.7550	0.4219	25.7850	5983.7960	5984.2179
	Vertical Leg	7.8750	50.1950	395.2856	18.0879	22.7850	4088.3553	4106.4432
2	Horizontal Leg	9.0000	1.6250	14.6250	0.4219	25.7850	5983.7960	5984.2179
	Vertical Leg	7.8750	4.6250	36.4219	18.0879	22.7850	4088.3553	4106.4432
3	Web Plate	26.1600	27.4100	717.0456	5967.4936	0.0000	0.0000	5967.4936
4	Cover Plate Top	20.0000	54.1950	1083.9000	2.6042	26.7850	14348.7245	14351.3287
	Cover Plate Bottom	20.0000	0.6250	12.5000	2.6042	26.7850	14348.7245	14351.3287
<b>Total</b>		<b>99.91</b>		<b>2738.53</b>	<b>6009.72</b>		<b>48841.75</b>	<b>54851.47</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	27.4100 in	S <sub>top</sub> =	2001.15 in <sup>3</sup>	y-bar =	27.4100 in	S <sub>top</sub> =	2001.15 in <sup>3</sup>
I <sub>x</sub> =	54851.47 in <sup>4</sup>	S <sub>bott.</sub> =	2001.15 in <sup>3</sup>	I <sub>x</sub> =	54851.47 in <sup>4</sup>	S <sub>bott.</sub> =	2001.15 in <sup>3</sup>
C <sub>top</sub> =	27.4100 in	A =	99.9100 in <sup>2</sup>	C <sub>top</sub> =	27.4100 in	A =	99.9100 in <sup>2</sup>
C <sub>bottom</sub> =	27.4100 in	r <sub>x</sub> =	23.4309 in	C <sub>bottom</sub> =	27.4100 in	r <sub>x</sub> =	23.4309 in
J =	29.3415	Z =	2236.5666 in <sup>3</sup>			Z =	2236.5666 in <sup>3</sup>



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
3	Web Plate	26.1600	8.0000	209.2800	0.5450	0.0000	0.0000	0.5450
4	Cover Plate	40.0000	8.0000	320.0000	853.3333	0.0000	0.0000	853.3333
<b>Total</b>		<b>99.91</b>		<b>799.28</b>	<b>908.62</b>		<b>196.28</b>	<b>1104.89</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	138.11	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	138.11	in <sup>3</sup>
I <sub>y</sub> =	1104.89	in <sup>4</sup>	S <sub>left</sub> =	138.11	in <sup>3</sup>	I <sub>y</sub> =	1104.89	in <sup>4</sup>	S <sub>left</sub> =	138.11	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	99.9100	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	99.9100	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.3255	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.3255	in

Non-composite Capacities*		
	AB	AI
M	6150.56 k-ft	6150.56 k-ft
V	500.70 k	500.70 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
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AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

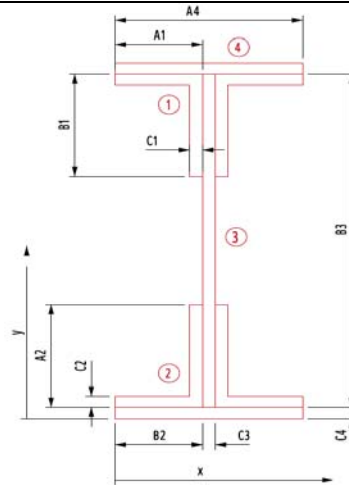
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 56.8800$  in  
 $d_o = 50.0000$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 0.6250$  in  
 $A_4 = 16.0000$  in



**Girder 21-22 Section 6**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg		9.0000	57.1300	514.1700	0.4219	28.0650	7088.7980	7089.2199
	Vertical Leg		7.8750	54.1300	426.2738	18.0879	25.0650	4947.5020	4965.5899
2	Horizontal Leg		9.0000	1.0000	9.0000	0.4219	28.0650	7088.7980	7089.2199
	Vertical Leg		7.8750	4.0000	31.5000	18.0879	25.0650	4947.5020	4965.5899
3	Web Plate		28.4400	29.0650	826.6086	7667.7425	0.0000	0.0000	7667.7425
4	Cover Plate Top		10.0000	57.8175	578.1750	0.3255	28.7525	8267.0626	8267.3881
	Cover Plate Bottom		10.0000	0.3125	3.1250	0.3255	28.7525	8267.0626	8267.3881
<b>Total</b>			<b>82.19</b>		<b>2388.85</b>	<b>7705.41</b>		<b>40606.73</b>	<b>48312.14</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	29.0650 in	S <sub>top</sub> =	1662.21 in <sup>3</sup>	y-bar =	29.0650 in	S <sub>top</sub> =	1662.21 in <sup>3</sup>
I <sub>x</sub> =	48312.14 in <sup>4</sup>	S <sub>bott.</sub> =	1662.21 in <sup>3</sup>	I <sub>x</sub> =	48312.14 in <sup>4</sup>	S <sub>bott.</sub> =	1662.21 in <sup>3</sup>
C <sub>top</sub> =	29.0650 in	A =	82.1900 in <sup>2</sup>	C <sub>top</sub> =	29.0650 in	A =	82.1900 in <sup>2</sup>
C <sub>bottom</sub> =	29.0650 in	r <sub>x</sub> =	24.2448 in	C <sub>bottom</sub> =	29.0650 in	r <sub>x</sub> =	24.2448 in
J =	11.3023	Z =	1879.4106 in <sup>3</sup>			Z =	1879.4106 in <sup>3</sup>





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Date 3/23/2012  
 Date 4/2/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	28.4400	8.0000	227.5200	0.5925	0.0000	0.0000	0.5925	
4	Cover Plate	20.0000	8.0000	160.0000	426.6667	0.0000	0.0000	426.6667	
<b>Total</b>		<b>82.19</b>		<b>657.52</b>	<b>482.00</b>		<b>196.28</b>	<b>678.27</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	84.78	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	84.78	in <sup>3</sup>
I <sub>y</sub> =	678.27	in <sup>4</sup>	S <sub>left</sub> =	84.78	in <sup>3</sup>	I <sub>y</sub> =	678.27	in <sup>4</sup>	S <sub>left</sub> =	84.78	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	82.1900	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	82.1900	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.8727	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.8727	in

Non-composite Capacities*		
	AB	AI
M	5168.38 k-ft	5168.38 k-ft
V	544.34 k	544.34 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
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AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

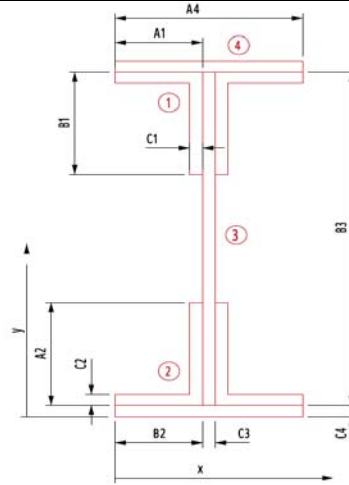
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 62.0400$  in  
 $d_o = 59.4400$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 0.6250$  in  
 $A_4 = 16.0000$  in



**Girder 21-22 Section 7**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg		9.0000	62.2900	560.6100	0.4219	30.6450	8452.0442	8452.4661
	Vertical Leg		7.8750	59.2900	466.9088	18.0879	27.6450	6018.4374	6036.5253
2	Horizontal Leg		9.0000	1.0000	9.0000	0.4219	30.6450	8452.0442	8452.4661
	Vertical Leg		7.8750	4.0000	31.5000	18.0879	27.6450	6018.4374	6036.5253
3	Web Plate		31.0200	31.6450	981.6279	9949.5657	0.0000	0.0000	9949.5657
4	Cover Plate Top		10.0000	62.9775	629.7750	0.3255	31.3325	9817.2556	9817.5811
	Cover Plate Bottom		10.0000	0.3125	3.1250	0.3255	31.3325	9817.2556	9817.5811
<b>Total</b>			<b>84.77</b>		<b>2682.55</b>	<b>9987.24</b>		<b>48575.47</b>	<b>58562.71</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	31.6450	in	S <sub>top</sub> = 1850.61 in <sup>3</sup>	y-bar =	31.6450	in	S <sub>top</sub> = 1850.61 in <sup>3</sup>
I <sub>x</sub> =	58562.71	n <sup>4</sup>	S <sub>bott.</sub> = 1850.61 in <sup>3</sup>	I <sub>x</sub> =	58562.71	in <sup>4</sup>	S <sub>bott.</sub> = 1850.61 in <sup>3</sup>
C <sub>top</sub> =	31.6450	in	A = 84.7700 in <sup>2</sup>	C <sub>top</sub> =	31.6450	in	A = 84.7700 in <sup>2</sup>
C <sub>bottom</sub> =	31.6450	in	r <sub>x</sub> = 26.2839 in	C <sub>bottom</sub> =	31.6450	in	r <sub>x</sub> = 26.2839 in
J =	11.5173		Z = 2094.7890 in <sup>3</sup>				Z = 2094.7890 in <sup>3</sup>



Made By CTG  
 Checked By DMP

Date 3/23/2012  
 Date 4/2/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
3	Web Plate	31.0200	8.0000	248.1600	0.6463	0.0000	0.0000	0.6463
4	Cover Plate	20.0000	8.0000	160.0000	426.6667	0.0000	0.0000	426.6667
<b>Total</b>		<b>84.77</b>		<b>678.16</b>	<b>482.05</b>		<b>196.28</b>	<b>678.33</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	84.79	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	84.79	in <sup>3</sup>
I <sub>y</sub> =	678.33	in <sup>4</sup>	S <sub>left</sub> =	84.79	in <sup>3</sup>	I <sub>y</sub> =	678.33	in <sup>4</sup>	S <sub>left</sub> =	84.79	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	84.7700	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	84.7700	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.8288	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.8288	in

Non-composite Capacities*		
	AB	AI
M	5760.67 k-ft	5760.67 k-ft
V	593.72 k	593.72 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



Made By CTG  
Checked By DMP

Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

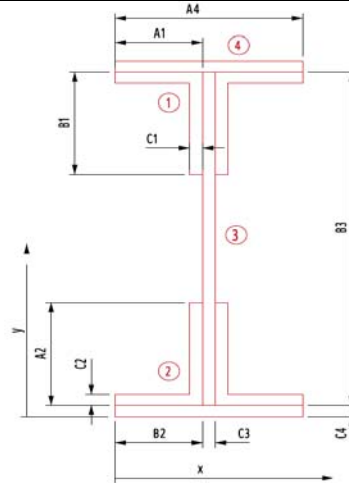
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 63.1200$  in  
 $d_o = 78.6875$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 0.8750$  in  
 $A_4 = 16.0000$  in



**Girder 22-23 Section 1**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	63.6200	572.5800	0.4219	31.1850	8752.5380	8752.9599
	Vertical Leg	7.8750	60.6200	477.3825	18.0879	28.1850	6255.8545	6273.9424
2	Horizontal Leg	9.0000	1.2500	11.2500	0.4219	31.1850	8752.5380	8752.9599
	Vertical Leg	7.8750	4.2500	33.4688	18.0879	28.1850	6255.8545	6273.9424
3	Web Plate	31.5600	32.4350	1023.6486	10478.2735	0.0000	0.0000	10478.2735
4	Cover Plate Top	14.0000	64.4325	902.0550	0.8932	31.9975	14333.7601	14334.6533
	Cover Plate Bottom	14.0000	0.4375	6.1250	0.8932	31.9975	14333.7601	14334.6533
<b>Total</b>		<b>93.31</b>		<b>3026.51</b>	<b>10517.08</b>		<b>58684.31</b>	<b>69201.38</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	32.4350	in	S <sub>top</sub> =	2133.54	in <sup>3</sup>	y-bar =	32.4350	in	S <sub>top</sub> =	2133.54	in <sup>3</sup>
I <sub>x</sub> =	69201.38	n <sup>4</sup>	S <sub>bottom</sub> =	2133.54	in <sup>3</sup>	I <sub>x</sub> =	69201.38	in <sup>4</sup>	S <sub>bottom</sub> =	2133.54	in <sup>3</sup>
C <sub>top</sub> =	32.4350	in	A =	93.3100	in <sup>2</sup>	C <sub>top</sub> =	32.4350	in	A =	93.3100	in <sup>2</sup>
C <sub>bottom</sub> =	32.4350	in	r <sub>x</sub> =	27.2329	in	C <sub>bottom</sub> =	32.4350	in	r <sub>x</sub> =	27.2329	in
J =	16.1040		Z =	2399.1906	in <sup>3</sup>	Z =	2399.1906	in <sup>3</sup>			



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
3	Web Plate	31.5600	8.0000	252.4800	0.6575	0.0000	0.0000	0.6575
4	Cover Plate	28.0000	8.0000	224.0000	597.3333	0.0000	0.0000	597.3333
<b>Total</b>		<b>93.31</b>		<b>746.48</b>	<b>652.73</b>		<b>196.28</b>	<b>849.01</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	106.13	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	106.13	in <sup>3</sup>
I <sub>y</sub> =	849.01	in <sup>4</sup>	S <sub>left</sub> =	106.13	in <sup>3</sup>	I <sub>y</sub> =	849.01	in <sup>4</sup>	S <sub>left</sub> =	106.13	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	93.3100	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	93.3100	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.0164	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.0164	in

Non-composite Capacities*		
	AB	AI
M	6597.77 k-ft	6597.77 k-ft
V	559.39 k	559.39 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
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AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

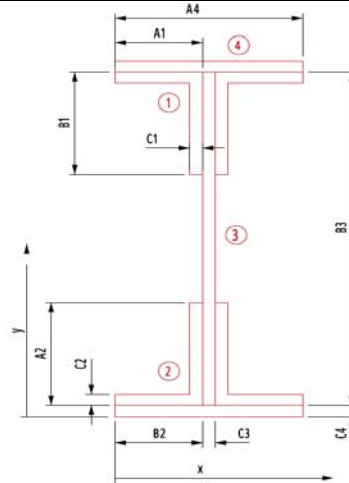
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 58.0800$  in  
 $d_o = 53.0000$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 0.8750$  in  
 $A_4 = 16.0000$  in



**Girder 22-23 Section 2**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	58.5800	527.2200	0.4219	28.6650	7395.1400	7395.5619
	Vertical Leg	7.8750	55.5800	437.6925	18.0879	25.6650	5187.2013	5205.2892
2	Horizontal Leg	9.0000	1.2500	11.2500	0.4219	28.6650	7395.1400	7395.5619
	Vertical Leg	7.8750	4.2500	33.4688	18.0879	25.6650	5187.2013	5205.2892
3	Web Plate	29.0400	29.9150	868.7316	8163.3531	0.0000	0.0000	8163.3531
4	Cover Plate Top	14.0000	59.3925	831.4950	0.8932	29.4775	12164.9221	12165.8153
	Cover Plate Bottom	14.0000	0.4375	6.1250	0.8932	29.4775	12164.9221	12165.8153
<b>Total</b>		<b>90.79</b>		<b>2715.98</b>	<b>8202.16</b>		<b>49494.53</b>	<b>57696.69</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	29.9150	in	$S_{top} = 1928.69$	in <sup>3</sup>	y-bar =	29.9150	in	$S_{top} = 1928.69$	in <sup>3</sup>		
$I_x =$	57696.69	n <sup>4</sup>	$S_{bott.} = 1928.69$	in <sup>3</sup>	$I_x =$	57696.69	in <sup>4</sup>	$S_{bott.} = 1928.69$	in <sup>3</sup>		
$C_{top} =$	29.9150	in	A =	90.7900	in <sup>2</sup>	$C_{top} =$	29.9150	in	A =	90.7900	in <sup>2</sup>
$C_{bottom} =$	29.9150	in	$r_x =$	25.2090	in	$C_{bottom} =$	29.9150	in	$r_x =$	25.2090	in
J =	15.8940		Z =	2167.2246	in <sup>3</sup>				Z =	2167.2246	in <sup>3</sup>



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	29.0400	8.0000	232.3200	0.6050	0.0000	0.0000	0.6050	
4	Cover Plate	28.0000	8.0000	224.0000	597.3333	0.0000	0.0000	597.3333	
<b>Total</b>		<b>90.79</b>		<b>726.32</b>	<b>652.68</b>		<b>196.28</b>	<b>848.95</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	106.12	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	106.12	in <sup>3</sup>
I <sub>y</sub> =	848.95	in <sup>4</sup>	S <sub>left</sub> =	106.12	in <sup>3</sup>	I <sub>y</sub> =	848.95	in <sup>4</sup>	S <sub>left</sub> =	106.12	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	90.7900	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	90.7900	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.0579	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.0579	in

Non-composite Capacities*		
	AB	AI
M	5959.87 k-ft	5959.87 k-ft
V	555.83 k	555.83 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
------------------	-----------

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



Made By CTG  
Checked By DMP

Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

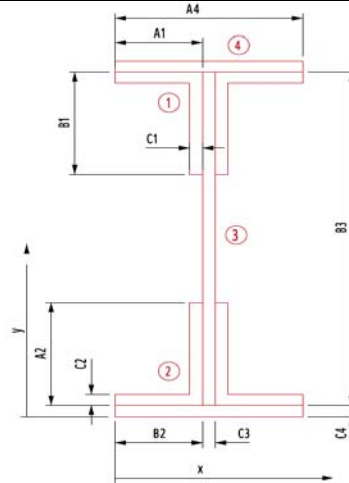
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 53.2800$  in  
 $d_o = 48.0000$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 0.8750$  in  
 $A_4 = 16.0000$  in



**Girder 22-23 Section 3**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	53.7800	484.0200	0.4219	26.2650	6208.6520	6209.0739
	Vertical Leg	7.8750	50.7800	399.8925	18.0879	23.2650	4262.4243	4280.5122
2	Horizontal Leg	9.0000	1.2500	11.2500	0.4219	26.2650	6208.6520	6209.0739
	Vertical Leg	7.8750	4.2500	33.4688	18.0879	23.2650	4262.4243	4280.5122
3	Web Plate	26.6400	27.5150	732.9996	6302.0436	0.0000	0.0000	6302.0436
4	Cover Plate Top	14.0000	54.5925	764.2950	0.8932	27.0775	10264.6741	10265.5673
	Cover Plate Bottom	14.0000	0.4375	6.1250	0.8932	27.0775	10264.6741	10265.5673
<b>Total</b>		<b>88.39</b>		<b>2432.05</b>	<b>6340.85</b>		<b>41471.50</b>	<b>47812.35</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	27.5150	in	S <sub>top</sub> = 1737.68 in <sup>3</sup>	y-bar =	27.5150	in	S <sub>top</sub> = 1737.68 in <sup>3</sup>
I <sub>x</sub> =	47812.35	n <sup>4</sup>	S <sub>bott.</sub> = 1737.68 in <sup>3</sup>	I <sub>x</sub> =	47812.35	in <sup>4</sup>	S <sub>bott.</sub> = 1737.68 in <sup>3</sup>
C <sub>top</sub> =	27.5150	in	A = 88.3900 in <sup>2</sup>	C <sub>top</sub> =	27.5150	in	A = 88.3900 in <sup>2</sup>
C <sub>bottom</sub> =	27.5150	in	r <sub>x</sub> = 23.2578 in	C <sub>bottom</sub> =	27.5150	in	r <sub>x</sub> = 23.2578 in
J =	15.6940		Z = 1952.2086 in <sup>3</sup>				Z = 1952.2086 in <sup>3</sup>





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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
3	Web Plate	26.6400	8.0000	213.1200	0.5550	0.0000	0.0000	0.5550
4	Cover Plate	28.0000	8.0000	224.0000	597.3333	0.0000	0.0000	597.3333
<b>Total</b>		<b>88.39</b>		<b>707.12</b>	<b>652.63</b>		<b>196.28</b>	<b>848.90</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	106.11	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	106.11	in <sup>3</sup>
I <sub>y</sub> =	848.90	in <sup>4</sup>	S <sub>left</sub> =	106.11	in <sup>3</sup>	I <sub>y</sub> =	848.90	in <sup>4</sup>	S <sub>left</sub> =	106.11	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	88.3900	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	88.3900	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.0990	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.0990	in

Non-composite Capacities*		
	AB	AI
M	5368.57 k-ft	5368.57 k-ft
V	509.89 k	509.89 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
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AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

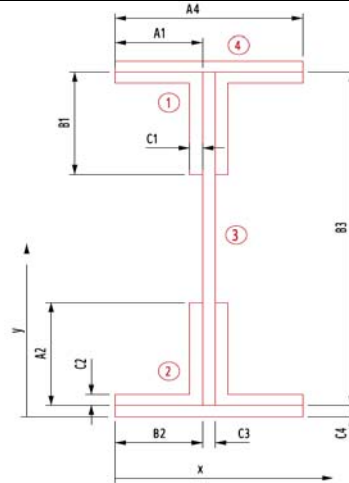
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 49.5600$  in  
 $d_o = 50.0000$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 1.7500$  in  
 $A_4 = 16.0000$  in



**Girder 22-23 Section 4**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	50.9350	458.4150	0.4219	24.4050	5360.4362	5360.8581
	Vertical Leg	7.8750	47.9350	377.4881	18.0879	21.4050	3608.1204	3626.2083
2	Horizontal Leg	9.0000	2.1250	19.1250	0.4219	24.4050	5360.4362	5360.8581
	Vertical Leg	7.8750	5.1250	40.3594	18.0879	21.4050	3608.1204	3626.2083
3	Web Plate	24.7800	26.5300	657.4134	5072.0398	0.0000	0.0000	5072.0398
4	Cover Plate Top	28.0000	52.1850	1461.1800	7.1458	25.6550	18429.0127	18436.1585
	Cover Plate Bottom	28.0000	0.8750	24.5000	7.1458	25.6550	18429.0127	18436.1585
<b>Total</b>		<b>114.53</b>		<b>3038.48</b>	<b>5123.35</b>		<b>54795.14</b>	<b>59918.49</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	26.5300 in	S <sub>top</sub> =	2258.52 in <sup>3</sup>	y-bar =	26.5300 in	S <sub>top</sub> =	2258.52 in <sup>3</sup>
I <sub>x</sub> =	59918.49 in <sup>4</sup>	S <sub>bott.</sub> =	2258.52 in <sup>3</sup>	I <sub>x</sub> =	59918.49 in <sup>4</sup>	S <sub>bott.</sub> =	2258.52 in <sup>3</sup>
C <sub>top</sub> =	26.5300 in	A =	114.5300 in <sup>2</sup>	C <sub>top</sub> =	26.5300 in	A =	114.5300 in <sup>2</sup>
C <sub>bottom</sub> =	26.5300 in	r <sub>x</sub> =	22.8729 in	C <sub>bottom</sub> =	26.5300 in	r <sub>x</sub> =	22.8729 in
J =	65.5598	Z =	2520.1230 in <sup>3</sup>	Z =	2520.1230 in <sup>3</sup>		



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
3	Web Plate	24.7800	8.0000	198.2400	0.5163	0.0000	0.0000	0.5163
4	Cover Plate	56.0000	8.0000	448.0000	1194.6667	0.0000	0.0000	1194.6667
<b>Total</b>		<b>114.53</b>		<b>916.24</b>	<b>1249.92</b>		<b>196.28</b>	<b>1446.20</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	180.77	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	180.77	in <sup>3</sup>
I <sub>y</sub> =	1446.20	in <sup>4</sup>	S <sub>left</sub> =	180.77	in <sup>3</sup>	I <sub>y</sub> =	1446.20	in <sup>4</sup>	S <sub>left</sub> =	180.77	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	114.5300	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	114.5300	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5535	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5535	in

Non-composite Capacities*		
	AB	AI
M	6930.34 k-ft	6930.34 k-ft
V	474.29 k	474.29 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
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AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

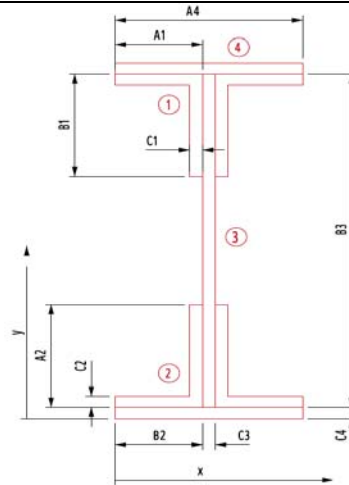
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 50.2800$  in  
 $d_o = 50.0000$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 1.7500$  in  
 $A_4 = 16.0000$  in



**Girder 22-23 Section 5**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	51.6550	464.8950	0.4219	24.7650	5519.7470	5520.1689
	Vertical Leg	7.8750	48.6550	383.1581	18.0879	21.7650	3730.5074	3748.5953
2	Horizontal Leg	9.0000	2.1250	19.1250	0.4219	24.7650	5519.7470	5520.1689
	Vertical Leg	7.8750	5.1250	40.3594	18.0879	21.7650	3730.5074	3748.5953
3	Web Plate	25.1400	26.8900	676.0146	5296.3242	0.0000	0.0000	5296.3242
4	Cover Plate Top	28.0000	52.9050	1481.3400	7.1458	26.0150	18949.8463	18956.9921
	Cover Plate Bottom	28.0000	0.8750	24.5000	7.1458	26.0150	18949.8463	18956.9921
<b>Total</b>		<b>114.89</b>		<b>3089.39</b>	<b>5347.64</b>		<b>56400.20</b>	<b>61747.84</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	26.8900 in	S <sub>top</sub> =	2296.31 in <sup>3</sup>	y-bar =	26.8900 in	S <sub>top</sub> =	2296.31 in <sup>3</sup>
I <sub>x</sub> =	61747.84 in <sup>4</sup>	S <sub>bottom</sub> =	2296.31 in <sup>3</sup>	I <sub>x</sub> =	61747.84 in <sup>4</sup>	S <sub>bottom</sub> =	2296.31 in <sup>3</sup>
C <sub>top</sub> =	26.8900 in	A =	114.8900 in <sup>2</sup>	C <sub>top</sub> =	26.8900 in	A =	114.8900 in <sup>2</sup>
C <sub>bottom</sub> =	26.8900 in	r <sub>x</sub> =	23.1830 in	C <sub>bottom</sub> =	26.8900 in	r <sub>x</sub> =	23.1830 in
J =	65.5898	Z =	2561.4186 in <sup>3</sup>	Z =	2561.4186		in <sup>3</sup>



Made By CTG  
 Checked By DMP

Date 3/23/2012  
 Date 4/2/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
3	Web Plate	25.1400	8.0000	201.1200	0.5238	0.0000	0.0000	0.5238
4	Cover Plate	56.0000	8.0000	448.0000	1194.6667	0.0000	0.0000	1194.6667
<b>Total</b>		<b>114.89</b>		<b>919.12</b>	<b>1249.93</b>		<b>196.28</b>	<b>1446.21</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	180.78	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	180.78	in <sup>3</sup>
I <sub>y</sub> =	1446.21	in <sup>4</sup>	S <sub>left</sub> =	180.78	in <sup>3</sup>	I <sub>y</sub> =	1446.21	in <sup>4</sup>	S <sub>left</sub> =	180.78	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	114.8900	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	114.8900	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5479	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5479	in

Non-composite Capacities*		
	AB	AI
M	7043.90 k-ft	7043.90 k-ft
V	481.18 k	481.18 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

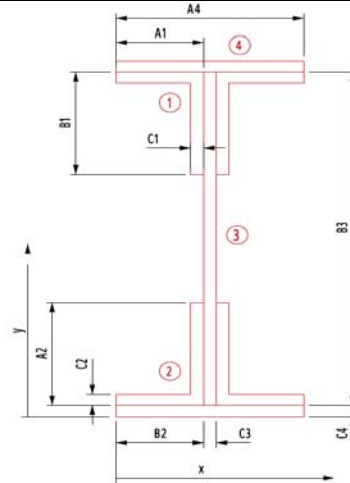
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 55.8000$  in  
 $d_o = 50.0000$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 0.8750$  in  
 $A_4 = 16.0000$  in



**Girder 22-23 Section 6**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg		9.0000	56.3000	506.7000	0.4219	27.5250	6818.6306	6819.0525
	Vertical Leg		7.8750	53.3000	419.7375	18.0879	24.5250	4736.6205	4754.7084
2	Horizontal Leg		9.0000	1.2500	11.2500	0.4219	27.5250	6818.6306	6819.0525
	Vertical Leg		7.8750	4.2500	33.4688	18.0879	24.5250	4736.6205	4754.7084
3	Web Plate		27.9000	28.7750	802.8225	7239.2130	0.0000	0.0000	7239.2130
4	Cover Plate Top		14.0000	57.1125	799.5750	0.8932	28.3375	11242.1947	11243.0879
	Cover Plate Bottom		14.0000	0.4375	6.1250	0.8932	28.3375	11242.1947	11243.0879
<b>Total</b>			<b>89.65</b>		<b>2579.68</b>	<b>7278.02</b>		<b>45594.89</b>	<b>52872.91</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	28.7750	in	S <sub>top</sub> = 1837.46 in <sup>3</sup>	y-bar =	28.7750	in	S <sub>top</sub> = 1837.46 in <sup>3</sup>
I <sub>x</sub> =	52872.91	n <sup>4</sup>	S <sub>bott.</sub> = 1837.46 in <sup>3</sup>	I <sub>x</sub> =	52872.91	in <sup>4</sup>	S <sub>bott.</sub> = 1837.46 in <sup>3</sup>
C <sub>top</sub> =	28.7750	in	A = 89.6500 in <sup>2</sup>	C <sub>top</sub> =	28.7750	in	A = 89.6500 in <sup>2</sup>
C <sub>bottom</sub> =	28.7750	in	r <sub>x</sub> = 24.2852 in	C <sub>bottom</sub> =	28.7750	in	r <sub>x</sub> = 24.2852 in
J =	15.7990		Z = 2064.3738 in <sup>3</sup>				Z = 2064.3738 in <sup>3</sup>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
3	Web Plate	27.9000	8.0000	223.2000	0.5813	0.0000	0.0000	0.5813
4	Cover Plate	28.0000	8.0000	224.0000	597.3333	0.0000	0.0000	597.3333
<b>Total</b>		<b>89.65</b>		<b>717.20</b>	<b>652.65</b>		<b>196.28</b>	<b>848.93</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	106.12	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	106.12	in <sup>3</sup>
I <sub>y</sub> =	848.93	in <sup>4</sup>	S <sub>left</sub> =	106.12	in <sup>3</sup>	I <sub>y</sub> =	848.93	in <sup>4</sup>	S <sub>left</sub> =	106.12	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	89.6500	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	89.6500	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.0772	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.0772	in

Non-composite Capacities*		
	AB	AI
M	5677.03 k-ft	5677.03 k-ft
V	534.01 k	534.01 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

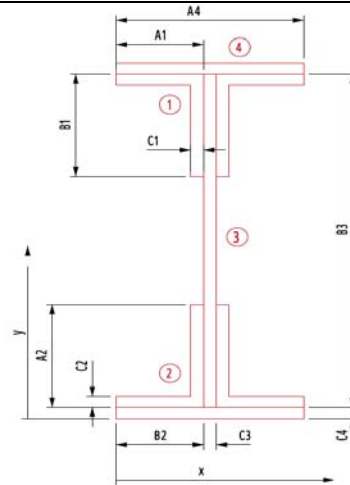
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 59.7600$  in  
 $d_o = 55.4375$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 0.8750$  in  
 $A_4 = 16.0000$  in



**Girder 22-23 Section 7**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	60.2600	542.3400	0.4219	29.5050	7834.9052	7835.3271
	Vertical Leg	7.8750	57.2600	450.9225	18.0879	26.5050	5532.3058	5550.3937
2	Horizontal Leg	9.0000	1.2500	11.2500	0.4219	29.5050	7834.9052	7835.3271
	Vertical Leg	7.8750	4.2500	33.4688	18.0879	26.5050	5532.3058	5550.3937
3	Web Plate	29.8800	30.7550	918.9594	8892.4314	0.0000	0.0000	8892.4314
4	Cover Plate Top	14.0000	61.0725	855.0150	0.8932	30.3175	12868.1113	12869.0045
	Cover Plate Bottom	14.0000	0.4375	6.1250	0.8932	30.3175	12868.1113	12869.0045
<b>Total</b>		<b>91.63</b>		<b>2818.08</b>	<b>8931.24</b>		<b>52470.64</b>	<b>61401.88</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	30.7550	in	S <sub>top</sub> =	1996.48	in <sup>3</sup>	y-bar =	30.7550	in	S <sub>top</sub> =	1996.48	in <sup>3</sup>
I <sub>x</sub> =	61401.88	n <sup>4</sup>	S <sub>bott.</sub> =	1996.48	in <sup>3</sup>	I <sub>x</sub> =	61401.88	in <sup>4</sup>	S <sub>bott.</sub> =	1996.48	in <sup>3</sup>
C <sub>top</sub> =	30.7550	in	A =	91.6300	in <sup>2</sup>	C <sub>top</sub> =	30.7550	in	A =	91.6300	in <sup>2</sup>
C <sub>bottom</sub> =	30.7550	in	r <sub>x</sub> =	25.8864	in	C <sub>bottom</sub> =	30.7550	in	r <sub>x</sub> =	25.8864	in
J =	15.9640		Z =	2243.8410	in <sup>3</sup>				Z =	2243.8410	in <sup>3</sup>





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Date 3/23/2012  
 Date 4/2/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
3	Web Plate	29.8800	8.0000	239.0400	0.6225	0.0000	0.0000	0.6225
4	Cover Plate	28.0000	8.0000	224.0000	597.3333	0.0000	0.0000	597.3333
<b>Total</b>		<b>91.63</b>		<b>733.04</b>	<b>652.69</b>		<b>196.28</b>	<b>848.97</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	106.12	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	106.12	in <sup>3</sup>
I <sub>y</sub> =	848.97	in <sup>4</sup>	S <sub>left</sub> =	106.12	in <sup>3</sup>	I <sub>y</sub> =	848.97	in <sup>4</sup>	S <sub>left</sub> =	106.12	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	91.6300	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	91.6300	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.0439	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.0439	in

Non-composite Capacities*		
	AB	AI
M	6170.56 k-ft	6170.56 k-ft
V	571.90 k	571.90 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
------------------	-----------

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

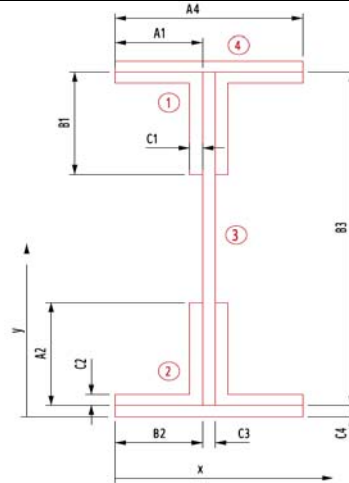
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 63.2400$  in  
 $d_o = 55.4375$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 0.8750$  in  
 $A_4 = 16.0000$  in



**Girder 22-23 Section 8**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	63.7400	573.6600	0.4219	31.2450	8786.2502	8786.6721
	Vertical Leg	7.8750	60.7400	478.3275	18.0879	28.2450	6282.5177	6300.6056
2	Horizontal Leg	9.0000	1.2500	11.2500	0.4219	31.2450	8786.2502	8786.6721
	Vertical Leg	7.8750	4.2500	33.4688	18.0879	28.2450	6282.5177	6300.6056
3	Web Plate	31.6200	32.4950	1027.4919	10538.1492	0.0000	0.0000	10538.1492
4	Cover Plate Top	14.0000	64.5525	903.7350	0.8932	32.0575	14387.5663	14388.4595
	Cover Plate Bottom	14.0000	0.4375	6.1250	0.8932	32.0575	14387.5663	14388.4595
<b>Total</b>		<b>93.37</b>		<b>3034.06</b>	<b>10576.96</b>		<b>58912.67</b>	<b>69489.62</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	32.4950	in	S <sub>top</sub> = 2138.47 in <sup>3</sup>	y-bar =	32.4950	in	S <sub>top</sub> = 2138.47 in <sup>3</sup>
I <sub>x</sub> =	69489.62	in <sup>4</sup>	S <sub>bottom</sub> = 2138.47 in <sup>3</sup>	I <sub>x</sub> =	69489.62	in <sup>4</sup>	S <sub>bottom</sub> = 2138.47 in <sup>3</sup>
C <sub>top</sub> =	32.4950	in	A = 93.3700 in <sup>2</sup>	C <sub>top</sub> =	32.4950	in	A = 93.3700 in <sup>2</sup>
C <sub>bottom</sub> =	32.4950	in	r <sub>x</sub> = 27.2807 in	C <sub>bottom</sub> =	32.4950	in	r <sub>x</sub> = 27.2807 in
J =	16.1090		Z = 2404.7910 in <sup>3</sup>				Z = 2404.7910 in <sup>3</sup>



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
3	Web Plate	31.6200	8.0000	252.9600	0.6588	0.0000	0.0000	0.6588
4	Cover Plate	28.0000	8.0000	224.0000	597.3333	0.0000	0.0000	597.3333
<b>Total</b>		<b>93.37</b>		<b>746.96</b>	<b>652.73</b>		<b>196.28</b>	<b>849.01</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	106.13	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	106.13	in <sup>3</sup>
I <sub>y</sub> =	849.01	in <sup>4</sup>	S <sub>left</sub> =	106.13	in <sup>3</sup>	I <sub>y</sub> =	849.01	in <sup>4</sup>	S <sub>left</sub> =	106.13	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	93.3700	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	93.3700	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.0155	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.0155	in

Non-composite Capacities*		
	AB	AI
M	6613.18 k-ft	6613.18 k-ft
V	605.21 k	605.21 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.3750$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.3750$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.3750$  in  
 $*B_3 = 62.6400$  in

$d_o = 46.3100$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.0000$  in  
 $A_5 = 0.0000$  in



Girder 23-24 Section 1

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	4.5000	62.4525	281.0363	0.0527	25.9706	3035.1189	3035.1716
	Vertical Leg	4.2188	59.4525	250.8152	11.1237	22.9706	2226.0125	2237.1361
2	Horizontal Leg	4.5000	0.1875	0.8438	0.0527	36.2944	5927.7832	5927.8360
	Vertical Leg	4.2188	3.1875	13.4473	11.1237	33.2944	4676.5629	4687.6866
3	Web Plate	23.4900	31.3200	735.7068	7680.7790	5.1619	625.9017	8306.6807
4	Cover Plate Top	8.0000	62.8900	503.1200	0.1667	26.4081	5579.0921	5579.2588
	Cover Plate Bottom	0.0000	0.0000	0.0000	0.0000	36.4819	0.0000	0.0000
<b>Total</b>		<b>48.93</b>		<b>1784.97</b>	<b>7703.30</b>		<b>22070.47</b>	<b>29773.77</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	36.4819 in	S <sub>top</sub> =	1116.88 in <sup>3</sup>	y-bar =	36.4819 in	S <sub>top</sub> =	1116.88 in <sup>3</sup>
I <sub>x</sub> =	29773.77 in <sup>4</sup>	S <sub>bottom</sub> =	816.12 in <sup>3</sup>	I <sub>x</sub> =	29773.77 in <sup>4</sup>	S <sub>bottom</sub> =	816.12 in <sup>3</sup>
C <sub>top</sub> =	26.6581 in	A =	48.9275 in <sup>2</sup>	C <sub>top</sub> =	26.6581 in	A =	48.9275 in <sup>2</sup>
C <sub>bottom</sub> =	36.4819 in	r <sub>x</sub> =	24.6684 in	C <sub>bottom</sub> =	36.4819 in	r <sub>x</sub> =	24.6684 in
J =	2.5851	Z =	1095.3072 in <sup>3</sup>	Z =	1095.3072 in <sup>3</sup>		



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	2.2500	4.8125	10.8281	6.7500	3.1875	22.8604	29.6104	
	Vertical Leg	2.1094	7.6250	16.0840	0.0247	0.3750	0.2966	0.3214	
1 (Right)	Horizontal Leg	2.2500	11.1875	25.1719	6.7500	3.1875	22.8604	29.6104	
	Vertical Leg	2.1094	8.3750	17.6660	0.0247	0.3750	0.2966	0.3214	
2 (Left)	Horizontal Leg	2.2500	4.8125	10.8281	6.7500	3.1875	22.8604	29.6104	
	Vertical Leg	2.1094	7.6250	16.0840	0.0247	0.3750	0.2966	0.3214	
2 (Right)	Horizontal Leg	2.2500	11.1875	25.1719	6.7500	3.1875	22.8604	29.6104	
	Vertical Leg	2.1094	8.3750	17.6660	0.0247	0.3750	0.2966	0.3214	
3	Web Plate	23.4900	8.0000	187.9200	0.2753	0.0000	0.0000	0.2753	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	0.0000	8.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
<b>Total</b>		<b>48.93</b>		<b>391.42</b>	<b>368.71</b>		<b>92.63</b>	<b>461.34</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	57.67	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	57.67	in <sup>3</sup>
I <sub>y</sub> =	461.34	in <sup>4</sup>	S <sub>left</sub> =	57.67	in <sup>3</sup>	I <sub>y</sub> =	461.34	in <sup>4</sup>	S <sub>left</sub> =	57.67	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	48.9275	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	48.9275	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.0707	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.0707	in

Non-composite Capacities*		
	AB	AI
M	2244.34 k-ft	2244.34 k-ft
V	413.62 k	413.62 k

\*Noncompact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.3750$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

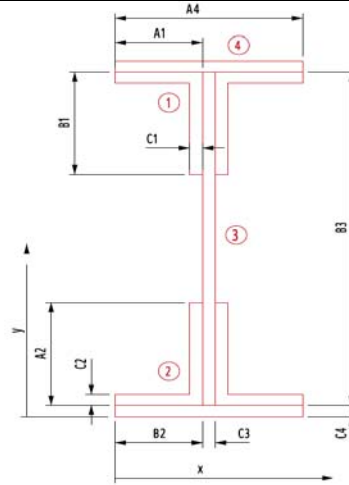
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.3750$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.3750$  in  
 $*B_3 = 60.9600$  in  
 $d_o = 65.7500$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in



**Girder 23-24 Section 2**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	4.5000	61.2725	275.7263	0.0527	30.2925	4129.3600	4129.4127
	Vertical Leg	4.2188	58.2725	245.8371	11.1237	27.2925	3142.4648	3153.5885
2	Horizontal Leg	4.5000	0.6875	3.0938	0.0527	30.2925	4129.3600	4129.4127
	Vertical Leg	4.2188	3.6875	15.5566	11.1237	27.2925	3142.4648	3153.5885
3	Web Plate	22.8600	30.9800	708.2028	7079.2116	0.0000	0.0000	7079.2116
4	Cover Plate Top	8.0000	61.7100	493.6800	0.1667	30.7300	7554.6632	7554.8299
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	30.7300	7554.6632	7554.8299
<b>Total</b>		<b>56.30</b>		<b>1744.10</b>	<b>7101.90</b>		<b>29652.98</b>	<b>36754.87</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	30.9800	in	S <sub>top</sub> =	1186.41	in <sup>3</sup>	y-bar =	30.9800	in	S <sub>top</sub> =	1186.41	in <sup>3</sup>
I <sub>x</sub> =	36754.87	n <sup>4</sup>	S <sub>bott.</sub> =	1186.41	in <sup>3</sup>	I <sub>x</sub> =	36754.87	in <sup>4</sup>	S <sub>bott.</sub> =	1186.41	in <sup>3</sup>
C <sub>top</sub> =	30.9800	in	A =	56.2975	in <sup>2</sup>	C <sub>top</sub> =	30.9800	in	A =	56.2975	in <sup>2</sup>
C <sub>bottom</sub> =	30.9800	in	r <sub>x</sub> =	25.5513	in	C <sub>bottom</sub> =	30.9800	in	r <sub>x</sub> =	25.5513	in
J =	3.2223		Z =	1342.9794	in <sup>3</sup>	Z =	1342.9794	in <sup>3</sup>			



Made By CTG  
Checked By DMP

Date 3/23/2012  
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Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg		2.2500	4.8125	10.8281	6.7500	3.1875	22.8604	29.6104
	Vertical Leg		2.1094	7.6250	16.0840	0.0247	0.3750	0.2966	0.3214
1 (Right)	Horizontal Leg		2.2500	11.1875	25.1719	6.7500	3.1875	22.8604	29.6104
	Vertical Leg		2.1094	8.3750	17.6660	0.0247	0.3750	0.2966	0.3214
2 (Left)	Horizontal Leg		2.2500	4.8125	10.8281	6.7500	3.1875	22.8604	29.6104
	Vertical Leg		2.1094	7.6250	16.0840	0.0247	0.3750	0.2966	0.3214
2 (Right)	Horizontal Leg		2.2500	11.1875	25.1719	6.7500	3.1875	22.8604	29.6104
	Vertical Leg		2.1094	8.3750	17.6660	0.0247	0.3750	0.2966	0.3214
3	Web Plate		22.8600	8.0000	182.8800	0.2679	0.0000	0.0000	0.2679
4	Cover Plate		16.0000	8.0000	128.0000	341.3333	0.0000	0.0000	341.3333
<b>Total</b>			<b>56.30</b>		<b>450.38</b>	<b>368.70</b>		<b>92.63</b>	<b>461.33</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	8.0000	in	S <sub>right</sub> =	57.67	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	57.67	in <sup>3</sup>
I <sub>y</sub> =	461.33	in <sup>4</sup>	S <sub>left</sub> =	57.67	in <sup>3</sup>	I <sub>y</sub> =	461.33	in <sup>4</sup>	S <sub>left</sub> =	57.67	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	56.2975	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	56.2975	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.8626	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.8626	in

Non-composite Capacities*		
	AB	AI
M	3262.62 k-ft	3262.62 k-ft
V	325.45 k	325.45 k

\*Noncompact Section

F <sub>y</sub> =	33.00 ksi
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AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.5000$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

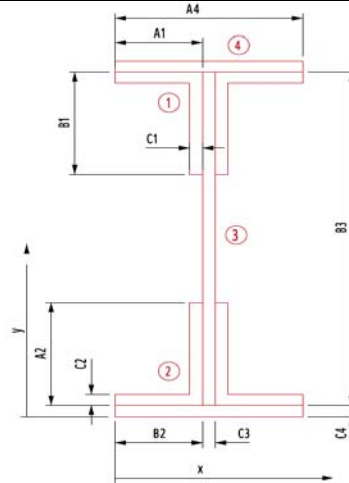
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.5000$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 61.9200$  in  
 $d_o = 65.7500$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in



**Girder 24-25 Section 1**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg		6.0000	62.1700	373.0200	0.1250	30.7100	5658.6246	5658.7496
	Vertical Leg		5.5000	59.1700	325.4350	13.8646	27.7100	4223.1426	4237.0071
2	Horizontal Leg		6.0000	0.7500	4.5000	0.1250	30.7100	5658.6246	5658.7496
	Vertical Leg		5.5000	3.7500	20.6250	13.8646	27.7100	4223.1426	4237.0071
3	Web Plate		30.9600	31.4600	974.0016	9891.9429	0.0000	0.0000	9891.9429
4	Cover Plate Top		8.0000	62.6700	501.3600	0.1667	31.2100	7792.5128	7792.6795
	Cover Plate Bottom		8.0000	0.2500	2.0000	0.1667	31.2100	7792.5128	7792.6795
<b>Total</b>			<b>69.96</b>		<b>2200.94</b>	<b>9920.26</b>		<b>35348.56</b>	<b>45268.82</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	31.4600 in	S <sub>top</sub> =	1438.93 in <sup>3</sup>	y-bar =	31.4600 in	S <sub>top</sub> =	1438.93 in <sup>3</sup>
I <sub>x</sub> =	45268.82 in <sup>4</sup>	S <sub>bottom</sub> =	1438.93 in <sup>3</sup>	I <sub>x</sub> =	45268.82 in <sup>4</sup>	S <sub>bottom</sub> =	1438.93 in <sup>3</sup>
C <sub>top</sub> =	31.4600 in	A =	69.9600 in <sup>2</sup>	C <sub>top</sub> =	31.4600 in	A =	69.9600 in <sup>2</sup>
C <sub>bottom</sub> =	31.4600 in	r <sub>x</sub> =	25.4375 in	C <sub>bottom</sub> =	31.4600 in	r <sub>x</sub> =	25.4375 in
J =	5.8300	Z =	1651.9508 in <sup>3</sup>	Z =	1651.9508 in <sup>3</sup>		





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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448
1 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448
2 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448
2 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448
3	Web Plate	30.9600	8.0000	247.6800	0.6450	0.0000	0.0000	0.6450
4	Cover Plate	16.0000	8.0000	128.0000	341.3333	0.0000	0.0000	341.3333
<b>Total</b>		<b>69.96</b>		<b>559.68</b>	<b>378.21</b>		<b>129.50</b>	<b>507.71</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	63.46	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	63.46	in <sup>3</sup>
I <sub>y</sub> =	507.71	in <sup>4</sup>	S <sub>left</sub> =	63.46	in <sup>3</sup>	I <sub>y</sub> =	507.71	in <sup>4</sup>	S <sub>left</sub> =	63.46	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	69.9600	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	69.9600	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.6939	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.6939	in

Non-composite Capacities*		
	AB	AI
M	4542.86 k-ft	4542.86 k-ft
V	592.57 k	592.57 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/23/2012  
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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.5000$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

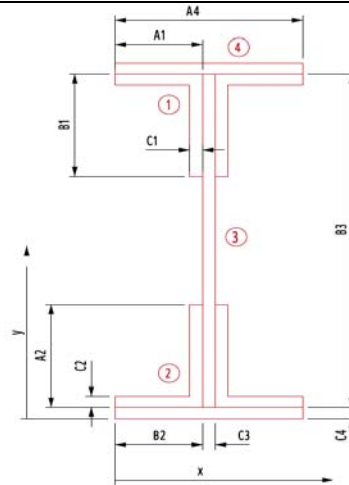
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.5000$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 56.7600$  in  
 $d_o = 58.0000$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in



**Girder 24-25 Section 2**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	6.0000	57.0100	342.0600	0.1250	28.1300	4747.7814	4747.9064
	Vertical Leg	5.5000	54.0100	297.0550	13.8646	25.1300	3473.3430	3487.2075
2	Horizontal Leg	6.0000	0.7500	4.5000	0.1250	28.1300	4747.7814	4747.9064
	Vertical Leg	5.5000	3.7500	20.6250	13.8646	25.1300	3473.3430	3487.2075
3	Web Plate	28.3800	28.8800	819.6144	7619.3148	0.0000	0.0000	7619.3148
4	Cover Plate Top	8.0000	57.5100	460.0800	0.1667	28.6300	6557.4152	6557.5819
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	28.6300	6557.4152	6557.5819
<b>Total</b>		<b>67.38</b>		<b>1945.93</b>	<b>7647.63</b>		<b>29557.08</b>	<b>37204.71</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	28.8800	in	S <sub>top</sub> =	1288.25	in <sup>3</sup>	y-bar =	28.8800	in	S <sub>top</sub> =	1288.25	in <sup>3</sup>
I <sub>x</sub> =	37204.71	n <sup>4</sup>	S <sub>bott.</sub> =	1288.25	in <sup>3</sup>	I <sub>x</sub> =	37204.71	in <sup>4</sup>	S <sub>bott.</sub> =	1288.25	in <sup>3</sup>
C <sub>top</sub> =	28.8800	in	A =	67.3800	in <sup>2</sup>	C <sub>top</sub> =	28.8800	in	A =	67.3800	in <sup>2</sup>
C <sub>bottom</sub> =	28.8800	in	r <sub>x</sub> =	23.4981	in	C <sub>bottom</sub> =	28.8800	in	r <sub>x</sub> =	23.4981	in
J =	5.6150		Z =	1474.7822	in <sup>3</sup>				Z =	1474.7822	in <sup>3</sup>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448
1 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448
2 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448
2 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448
3	Web Plate	28.3800	8.0000	227.0400	0.5913	0.0000	0.0000	0.5913
4	Cover Plate	16.0000	8.0000	128.0000	341.3333	0.0000	0.0000	341.3333
<b>Total</b>		<b>67.38</b>		<b>539.04</b>	<b>378.15</b>		<b>129.50</b>	<b>507.65</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	63.46	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	63.46	in <sup>3</sup>
I <sub>y</sub> =	507.65	in <sup>4</sup>	S <sub>left</sub> =	63.46	in <sup>3</sup>	I <sub>y</sub> =	507.65	in <sup>4</sup>	S <sub>left</sub> =	63.46	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	67.3800	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	67.3800	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.7448	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.7448	in

Non-composite Capacities*		
	AB	AI
M	4055.65 k-ft	4055.65 k-ft
V	543.19 k	543.19 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.5000$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

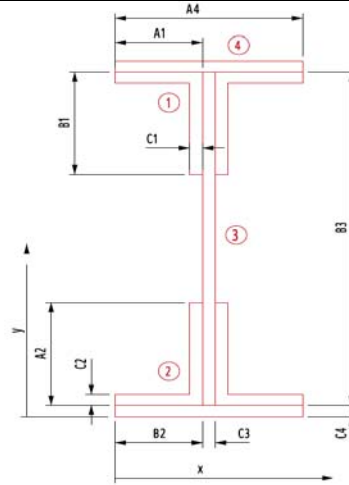
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.5000$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 51.3600$  in  
 $d_o = 48.0000$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in



**Girder 24-25 Section 3**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg		6.0000	51.6100	309.6600	0.1250	25.4300	3880.1094	3880.2344
	Vertical Leg		5.5000	48.6100	267.3550	13.8646	22.4300	2767.0770	2780.9415
2	Horizontal Leg		6.0000	0.7500	4.5000	0.1250	25.4300	3880.1094	3880.2344
	Vertical Leg		5.5000	3.7500	20.6250	13.8646	22.4300	2767.0770	2780.9415
3	Web Plate		25.6800	26.1800	672.3024	5644.9981	0.0000	0.0000	5644.9981
4	Cover Plate Top		8.0000	52.1100	416.8800	0.1667	25.9300	5378.9192	5379.0859
	Cover Plate Bottom		8.0000	0.2500	2.0000	0.1667	25.9300	5378.9192	5379.0859
<b>Total</b>			<b>64.68</b>		<b>1693.32</b>	<b>5673.31</b>		<b>24052.21</b>	<b>29725.52</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	26.1800	in	S <sub>top</sub> = 1135.43 in <sup>3</sup>	y-bar =	26.1800	in	S <sub>top</sub> = 1135.43 in <sup>3</sup>
I <sub>x</sub> =	29725.52	in <sup>4</sup>	S <sub>bottom</sub> = 1135.43 in <sup>3</sup>	I <sub>x</sub> =	29725.52	in <sup>4</sup>	S <sub>bottom</sub> = 1135.43 in <sup>3</sup>
C <sub>top</sub> =	26.1800	in	A = 64.6800 in <sup>2</sup>	C <sub>top</sub> =	26.1800	in	A = 64.6800 in <sup>2</sup>
C <sub>bottom</sub> =	26.1800	in	r <sub>x</sub> = 21.4378 in	C <sub>bottom</sub> =	26.1800	in	r <sub>x</sub> = 21.4378 in
J =	5.3900		Z = 1296.5012 in <sup>3</sup>				Z = 1296.5012 in <sup>3</sup>



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Date 3/23/2012  
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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448
1 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448
2 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448
2 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448
3	Web Plate	25.6800	8.0000	205.4400	0.5350	0.0000	0.0000	0.5350
4	Cover Plate	16.0000	8.0000	128.0000	341.3333	0.0000	0.0000	341.3333
<b>Total</b>		<b>64.68</b>		<b>517.44</b>	<b>378.10</b>		<b>129.50</b>	<b>507.60</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	63.45	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	63.45	in <sup>3</sup>
I <sub>y</sub> =	507.60	in <sup>4</sup>	S <sub>left</sub> =	63.45	in <sup>3</sup>	I <sub>y</sub> =	507.60	in <sup>4</sup>	S <sub>left</sub> =	63.45	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	64.6800	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	64.6800	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.8014	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.8014	in

Non-composite Capacities*		
	AB	AI
M	3565.38 k-ft	3565.38 k-ft
V	491.52 k	491.52 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.5000$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

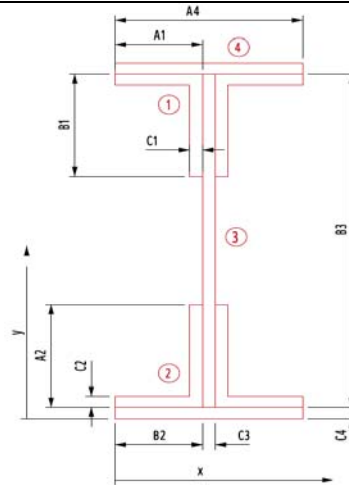
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.5000$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 48.9600$  in  
 $d_o = 46.0000$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 0.8750$  in  
 $A_4 = 16.0000$  in



**Girder 24-25 Section 4**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	6.0000	49.5850	297.5100	0.1250	24.2300	3522.5574	3522.6824
	Vertical Leg	5.5000	46.5850	256.2175	13.8646	21.2300	2478.9210	2492.7855
2	Horizontal Leg	6.0000	1.1250	6.7500	0.1250	24.2300	3522.5574	3522.6824
	Vertical Leg	5.5000	4.1250	22.6875	13.8646	21.2300	2478.9210	2492.7855
3	Web Plate	24.4800	25.3550	620.6904	4890.0465	0.0000	0.0000	4890.0465
4	Cover Plate Top	14.0000	50.2725	703.8150	0.8932	24.9175	8692.3453	8693.2385
	Cover Plate Bottom	14.0000	0.4375	6.1250	0.8932	24.9175	8692.3453	8693.2385
<b>Total</b>		<b>75.48</b>		<b>1913.80</b>	<b>4919.81</b>		<b>29387.65</b>	<b>34307.46</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	25.3550	in	S <sub>top</sub> =	1353.08	in <sup>3</sup>	y-bar =	25.3550	in	S <sub>top</sub> =	1353.08	in <sup>3</sup>
I <sub>x</sub> =	34307.46	n <sup>4</sup>	S <sub>bott.</sub> =	1353.08	in <sup>3</sup>	I <sub>x</sub> =	34307.46	in <sup>4</sup>	S <sub>bott.</sub> =	1353.08	in <sup>3</sup>
C <sub>top</sub> =	25.3550	in	A =	75.4800	in <sup>2</sup>	C <sub>top</sub> =	25.3550	in	A =	75.4800	in <sup>2</sup>
C <sub>bottom</sub> =	25.3550	in	r <sub>x</sub> =	21.3196	in	C <sub>bottom</sub> =	25.3550	in	r <sub>x</sub> =	21.3196	in
J =	11.1025		Z =	1521.6152	in <sup>3</sup>				Z =	1521.6152	in <sup>3</sup>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448
1 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448
2 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448
2 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448
3	Web Plate	24.4800	8.0000	195.8400	0.5100	0.0000	0.0000	0.5100
4	Cover Plate	28.0000	8.0000	224.0000	597.3333	0.0000	0.0000	597.3333
<b>Total</b>		<b>75.48</b>		<b>603.84</b>	<b>634.07</b>		<b>129.50</b>	<b>763.57</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	95.45	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	95.45	in <sup>3</sup>
I <sub>y</sub> =	763.57	in <sup>4</sup>	S <sub>left</sub> =	95.45	in <sup>3</sup>	I <sub>y</sub> =	763.57	in <sup>4</sup>	S <sub>left</sub> =	95.45	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	75.4800	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	75.4800	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.1806	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.1806	in

Non-composite Capacities*		
	AB	AI
M	4184.44 k-ft	4184.44 k-ft
V	468.55 k	468.55 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
------------------	-----------

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.5000$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

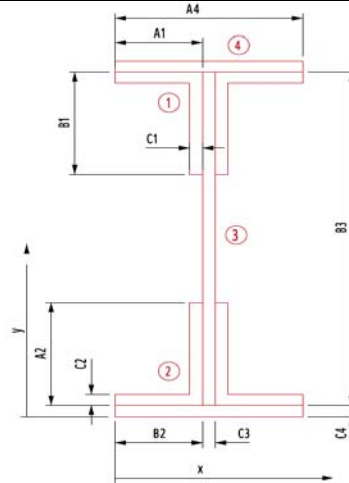
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.5000$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 51.3600$  in  
 $d_o = 46.0000$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in



**Girder 24-25 Section 5**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	6.0000	51.6100	309.6600	0.1250	25.4300	3880.1094	3880.2344
	Vertical Leg	5.5000	48.6100	267.3550	13.8646	22.4300	2767.0770	2780.9415
2	Horizontal Leg	6.0000	0.7500	4.5000	0.1250	25.4300	3880.1094	3880.2344
	Vertical Leg	5.5000	3.7500	20.6250	13.8646	22.4300	2767.0770	2780.9415
3	Web Plate	25.6800	26.1800	672.3024	5644.9981	0.0000	0.0000	5644.9981
4	Cover Plate Top	8.0000	52.1100	416.8800	0.1667	25.9300	5378.9192	5379.0859
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	25.9300	5378.9192	5379.0859
<b>Total</b>		<b>64.68</b>		<b>1693.32</b>	<b>5673.31</b>		<b>24052.21</b>	<b>29725.52</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	26.1800	in	S <sub>top</sub> = 1135.43 in <sup>3</sup>	y-bar =	26.1800	in	S <sub>top</sub> = 1135.43 in <sup>3</sup>
I <sub>x</sub> =	29725.52	in <sup>4</sup>	S <sub>bottom</sub> = 1135.43 in <sup>3</sup>	I <sub>x</sub> =	29725.52	in <sup>4</sup>	S <sub>bottom</sub> = 1135.43 in <sup>3</sup>
C <sub>top</sub> =	26.1800	in	A = 64.6800 in <sup>2</sup>	C <sub>top</sub> =	26.1800	in	A = 64.6800 in <sup>2</sup>
C <sub>bottom</sub> =	26.1800	in	r <sub>x</sub> = 21.4378 in	C <sub>bottom</sub> =	26.1800	in	r <sub>x</sub> = 21.4378 in
J =	5.3900		Z = 1296.5012 in <sup>3</sup>				Z = 1296.5012 in <sup>3</sup>





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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg		3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg		2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448
1 (Right)	Horizontal Leg		3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg		2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448
2 (Left)	Horizontal Leg		3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg		2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448
2 (Right)	Horizontal Leg		3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875
	Vertical Leg		2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448
3	Web Plate		25.6800	8.0000	205.4400	0.5350	0.0000	0.0000	0.5350
4	Cover Plate		16.0000	8.0000	128.0000	341.3333	0.0000	0.0000	341.3333
<b>Total</b>			<b>64.68</b>		<b>517.44</b>	<b>378.10</b>		<b>129.50</b>	<b>507.60</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	8.0000	in	S <sub>right</sub> =	63.45	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	63.45	in <sup>3</sup>
I <sub>y</sub> =	507.60	in <sup>4</sup>	S <sub>left</sub> =	63.45	in <sup>3</sup>	I <sub>y</sub> =	507.60	in <sup>4</sup>	S <sub>left</sub> =	63.45	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	64.6800	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	64.6800	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.8014	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.8014	in

Non-composite Capacities*		
	AB	AI
M	3565.38 k-ft	3565.38 k-ft
V	491.52 k	491.52 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
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AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.5000$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.5000$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

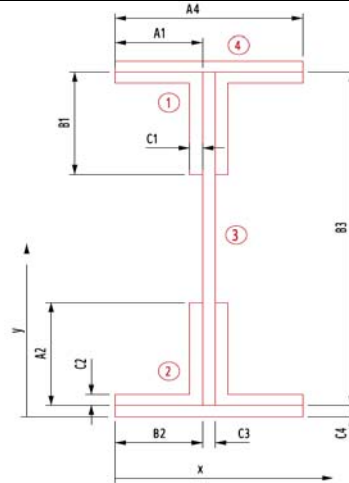
$C_3 = 0.5000$  in  
 $*B_3 = 56.7600$  in

$d_o = 58.0000$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in



**Girder 24-25 Section 6**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg		6.0000	57.0100	342.0600	0.1250	28.1300	4747.7814	4747.9064
	Vertical Leg		5.5000	54.0100	297.0550	13.8646	25.1300	3473.3430	3487.2075
2	Horizontal Leg		6.0000	0.7500	4.5000	0.1250	28.1300	4747.7814	4747.9064
	Vertical Leg		5.5000	3.7500	20.6250	13.8646	25.1300	3473.3430	3487.2075
3	Web Plate		28.3800	28.8800	819.6144	7619.3148	0.0000	0.0000	7619.3148
4	Cover Plate Top		8.0000	57.5100	460.0800	0.1667	28.6300	6557.4152	6557.5819
	Cover Plate Bottom		8.0000	0.2500	2.0000	0.1667	28.6300	6557.4152	6557.5819
<b>Total</b>			<b>67.38</b>		<b>1945.93</b>	<b>7647.63</b>		<b>29557.08</b>	<b>37204.71</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	28.8800	in	S <sub>top</sub> = 1288.25 in <sup>3</sup>	y-bar =	28.8800	in	S <sub>top</sub> = 1288.25 in <sup>3</sup>
I <sub>x</sub> =	37204.71	n <sup>4</sup>	S <sub>bott.</sub> = 1288.25 in <sup>3</sup>	I <sub>x</sub> =	37204.71	in <sup>4</sup>	S <sub>bott.</sub> = 1288.25 in <sup>3</sup>
C <sub>top</sub> =	28.8800	in	A = 67.3800 in <sup>2</sup>	C <sub>top</sub> =	28.8800	in	A = 67.3800 in <sup>2</sup>
C <sub>bottom</sub> =	28.8800	in	r <sub>x</sub> = 23.4981 in	C <sub>bottom</sub> =	28.8800	in	r <sub>x</sub> = 23.4981 in
J =	5.6150		Z = 1474.7822 in <sup>3</sup>				Z = 1474.7822 in <sup>3</sup>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448	
1 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448	
2 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448	
2 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448	
3	Web Plate	28.3800	8.0000	227.0400	0.5913	0.0000	0.0000	0.5913	
4	Cover Plate	16.0000	8.0000	128.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>67.38</b>		<b>539.04</b>	<b>378.15</b>		<b>129.50</b>	<b>507.65</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	63.46	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	63.46	in <sup>3</sup>
I <sub>y</sub> =	507.65	in <sup>4</sup>	S <sub>left</sub> =	63.46	in <sup>3</sup>	I <sub>y</sub> =	507.65	in <sup>4</sup>	S <sub>left</sub> =	63.46	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	67.3800	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	67.3800	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.7448	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.7448	in

Non-composite Capacities*		
	AB	AI
M	4055.65 k-ft	4055.65 k-ft
V	543.19 k	543.19 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.5000$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

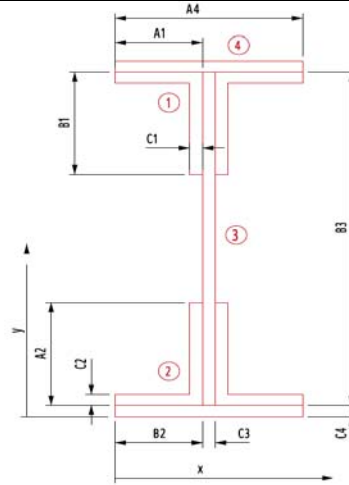
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.5000$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 62.0400$  in  
 $d_o = 73.9000$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in



**Girder 24-25 Section 7**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	6.0000	62.2900	373.7400	0.1250	30.7700	5680.7574	5680.8824
	Vertical Leg	5.5000	59.2900	326.0950	13.8646	27.7700	4241.4510	4255.3155
2	Horizontal Leg	6.0000	0.7500	4.5000	0.1250	30.7700	5680.7574	5680.8824
	Vertical Leg	5.5000	3.7500	20.6250	13.8646	27.7700	4241.4510	4255.3155
3	Web Plate	31.0200	31.5200	977.7504	9949.5657	0.0000	0.0000	9949.5657
4	Cover Plate Top	8.0000	62.7900	502.3200	0.1667	31.2700	7822.5032	7822.6699
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	31.2700	7822.5032	7822.6699
<b>Total</b>		<b>70.02</b>		<b>2207.03</b>	<b>9977.88</b>		<b>35489.42</b>	<b>45467.30</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	31.5200	in	S <sub>top</sub> = 1442.49 in <sup>3</sup>	y-bar =	31.5200	in	S <sub>top</sub> = 1442.49 in <sup>3</sup>
I <sub>x</sub> =	45467.30	n <sup>4</sup>	S <sub>bottom</sub> = 1442.49 in <sup>3</sup>	I <sub>x</sub> =	45467.30	in <sup>4</sup>	S <sub>bottom</sub> = 1442.49 in <sup>3</sup>
C <sub>top</sub> =	31.5200	in	A = 70.0200 in <sup>2</sup>	C <sub>top</sub> =	31.5200	in	A = 70.0200 in <sup>2</sup>
C <sub>bottom</sub> =	31.5200	in	r <sub>x</sub> = 25.4823 in	C <sub>bottom</sub> =	31.5200	in	r <sub>x</sub> = 25.4823 in
J =	5.8350		Z = 1656.1502 in <sup>3</sup>				Z = 1656.1502 in <sup>3</sup>



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448	
1 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448	
2 (Left)	Horizontal Leg	3.0000	4.7500	14.2500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	7.5000	20.6250	0.0573	0.5000	0.6875	0.7448	
2 (Right)	Horizontal Leg	3.0000	11.2500	33.7500	9.0000	3.2500	31.6875	40.6875	
	Vertical Leg	2.7500	8.5000	23.3750	0.0573	0.5000	0.6875	0.7448	
3	Web Plate	31.0200	8.0000	248.1600	0.6463	0.0000	0.0000	0.6463	
4	Cover Plate	16.0000	8.0000	128.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>70.02</b>		<b>560.16</b>	<b>378.21</b>		<b>129.50</b>	<b>507.71</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	63.46	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	63.46	in <sup>3</sup>
I <sub>y</sub> =	507.71	in <sup>4</sup>	S <sub>left</sub> =	63.46	in <sup>3</sup>	I <sub>y</sub> =	507.71	in <sup>4</sup>	S <sub>left</sub> =	63.46	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	70.0200	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	70.0200	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.6928	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.6928	in

Non-composite Capacities*		
	AB	AI
M	4554.41 k-ft	4554.41 k-ft
V	572.07 k	572.07 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.3750$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

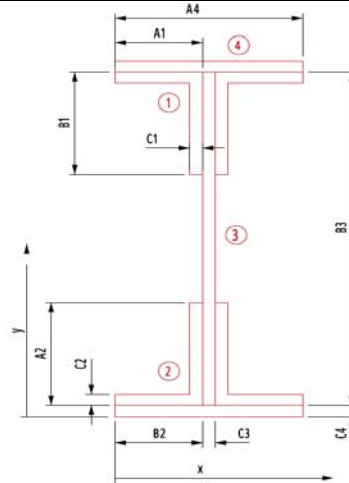
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.3750$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.3750$  in  
 $*B_3 = 61.2000$  in  
 $d_o = 66.9400$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in



**Girder 25-26 Section 1**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	4.5000	61.5125	276.8063	0.0527	30.4125	4162.1407	4162.1934
	Vertical Leg	4.2188	58.5125	246.8496	11.1237	27.4125	3170.1593	3181.2829
2	Horizontal Leg	4.5000	0.6875	3.0938	0.0527	30.4125	4162.1407	4162.1934
	Vertical Leg	4.2188	3.6875	15.5566	11.1237	27.4125	3170.1593	3181.2829
3	Web Plate	22.9500	31.1000	713.7450	7163.1540	0.0000	0.0000	7163.1540
4	Cover Plate Top	8.0000	61.9500	495.6000	0.1667	30.8500	7613.7800	7613.9467
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	30.8500	7613.7800	7613.9467
<b>Total</b>		<b>56.39</b>		<b>1753.65</b>	<b>7185.84</b>		<b>29892.16</b>	<b>37078.00</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	31.1000	in	S <sub>top</sub> = 1192.22 in <sup>3</sup>	y-bar =	31.1000	in	S <sub>top</sub> = 1192.22 in <sup>3</sup>
I <sub>x</sub> =	37078.00	n <sup>4</sup>	S <sub>bott.</sub> = 1192.22 in <sup>3</sup>	I <sub>x</sub> =	37078.00	in <sup>4</sup>	S <sub>bott.</sub> = 1192.22 in <sup>3</sup>
C <sub>top</sub> =	31.1000	in	A = 56.3875 in <sup>2</sup>	C <sub>top</sub> =	31.1000	in	A = 56.3875 in <sup>2</sup>
C <sub>bottom</sub> =	31.1000	in	r <sub>x</sub> = 25.6429 in	C <sub>bottom</sub> =	31.1000	in	r <sub>x</sub> = 25.6429 in
J =	3.2265		Z = 1349.7405 in <sup>3</sup>				Z = 1349.7405 in <sup>3</sup>



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	2.2500	4.8125	10.8281	6.7500	3.1875	22.8604	29.6104
	Vertical Leg	2.1094	7.6250	16.0840	0.0247	0.3750	0.2966	0.3214
1 (Right)	Horizontal Leg	2.2500	11.1875	25.1719	6.7500	3.1875	22.8604	29.6104
	Vertical Leg	2.1094	8.3750	17.6660	0.0247	0.3750	0.2966	0.3214
2 (Left)	Horizontal Leg	2.2500	4.8125	10.8281	6.7500	3.1875	22.8604	29.6104
	Vertical Leg	2.1094	7.6250	16.0840	0.0247	0.3750	0.2966	0.3214
2 (Right)	Horizontal Leg	2.2500	11.1875	25.1719	6.7500	3.1875	22.8604	29.6104
	Vertical Leg	2.1094	8.3750	17.6660	0.0247	0.3750	0.2966	0.3214
3	Web Plate	22.9500	8.0000	183.6000	0.2689	0.0000	0.0000	0.2689
4	Cover Plate	16.0000	8.0000	128.0000	341.3333	0.0000	0.0000	341.3333
<b>Total</b>		<b>56.39</b>		<b>451.10</b>	<b>368.70</b>		<b>92.63</b>	<b>461.33</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	57.67	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	57.67	in <sup>3</sup>
I <sub>y</sub> =	461.33	in <sup>4</sup>	S <sub>left</sub> =	57.67	in <sup>3</sup>	I <sub>y</sub> =	461.33	in <sup>4</sup>	S <sub>left</sub> =	57.67	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	56.3875	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	56.3875	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.8603	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.8603	in

Non-composite Capacities*		
	AB	AI
M	3278.60 k-ft	3278.60 k-ft
V	319.42 k	319.42 k

\*Noncompact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.3750$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.3750$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

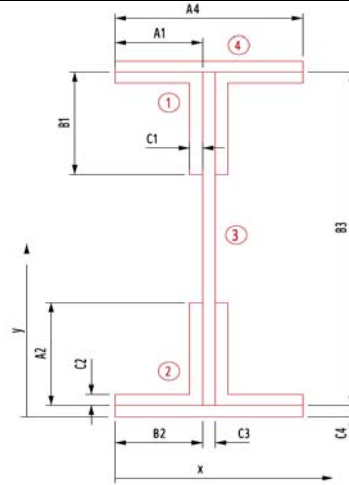
$C_3 = 0.3750$  in  
 $*B_3 = 56.7600$  in

$d_o = 48.0000$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in



**Girder 25-26 Section 2**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	4.5000	57.0725	256.8263	0.0527	28.1925	3576.6768	3576.7295
	Vertical Leg	4.2188	54.0725	228.1184	11.1237	25.1925	2677.4805	2688.6042
2	Horizontal Leg	4.5000	0.6875	3.0938	0.0527	28.1925	3576.6768	3576.7295
	Vertical Leg	4.2188	3.6875	15.5566	11.1237	25.1925	2677.4805	2688.6042
3	Web Plate	21.2850	28.8800	614.7108	5714.4861	0.0000	0.0000	5714.4861
4	Cover Plate Top	8.0000	57.5100	460.0800	0.1667	28.6300	6557.4152	6557.5819
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	28.6300	6557.4152	6557.5819
<b>Total</b>		<b>54.72</b>		<b>1580.39</b>	<b>5737.17</b>		<b>25623.15</b>	<b>31360.32</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	28.8800	in	$S_{top} = 1085.88$	in <sup>3</sup>	y-bar =	28.8800	in	$S_{top} = 1085.88$	in <sup>3</sup>		
$I_x =$	31360.32	n <sup>4</sup>	$S_{bott.} = 1085.88$	in <sup>3</sup>	$I_x =$	31360.32	in <sup>4</sup>	$S_{bott.} = 1085.88$	in <sup>3</sup>		
$C_{top} =$	28.8800	in	A =	54.7225	in <sup>2</sup>	$C_{top} =$	28.8800	in	A =	54.7225	in <sup>2</sup>
$C_{bottom} =$	28.8800	in	$r_x =$	23.9391	in	$C_{bottom} =$	28.8800	in	$r_x =$	23.9391	in
J =	3.1485		Z =	1226.4084	in <sup>3</sup>	Z =	1226.4084	in <sup>3</sup>			





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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	2.2500	4.8125	10.8281	6.7500	3.1875	22.8604	29.6104
	Vertical Leg	2.1094	7.6250	16.0840	0.0247	0.3750	0.2966	0.3214
1 (Right)	Horizontal Leg	2.2500	11.1875	25.1719	6.7500	3.1875	22.8604	29.6104
	Vertical Leg	2.1094	8.3750	17.6660	0.0247	0.3750	0.2966	0.3214
2 (Left)	Horizontal Leg	2.2500	4.8125	10.8281	6.7500	3.1875	22.8604	29.6104
	Vertical Leg	2.1094	7.6250	16.0840	0.0247	0.3750	0.2966	0.3214
2 (Right)	Horizontal Leg	2.2500	11.1875	25.1719	6.7500	3.1875	22.8604	29.6104
	Vertical Leg	2.1094	8.3750	17.6660	0.0247	0.3750	0.2966	0.3214
3	Web Plate	21.2850	8.0000	170.2800	0.2494	0.0000	0.0000	0.2494
4	Cover Plate	16.0000	8.0000	128.0000	341.3333	0.0000	0.0000	341.3333
<b>Total</b>		<b>54.72</b>		<b>437.78</b>	<b>368.68</b>		<b>92.63</b>	<b>461.31</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	57.66	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	57.66	in <sup>3</sup>
I <sub>y</sub> =	461.31	in <sup>4</sup>	S <sub>left</sub> =	57.66	in <sup>3</sup>	I <sub>y</sub> =	461.31	in <sup>4</sup>	S <sub>left</sub> =	57.66	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	54.7225	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	54.7225	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.9034	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	2.9034	in

Non-composite Capacities*		
	AB	AI
M	2986.18 k-ft	2986.18 k-ft
V	390.38 k	390.38 k

\*Noncompact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.3750$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.3750$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.3750$  in  
 $*B_3 = 61.8000$  in

$d_o = 44.0625$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.0000$  in  
 $A_5 = 0.0000$  in



Girder 24-25 Section 3

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	4.5000	61.6125	277.2563	0.0527	25.5862	2945.9520	2946.0048
	Vertical Leg	4.2188	58.6125	247.2715	11.1237	22.5862	2152.1469	2163.2706
2	Horizontal Leg	4.5000	0.1875	0.8438	0.0527	35.8388	5779.8731	5779.9259
	Vertical Leg	4.2188	3.1875	13.4473	11.1237	32.8388	4549.4314	4560.5550
3	Web Plate	23.1750	30.9000	716.1075	7375.9073	5.1263	609.0037	7984.9109
4	Cover Plate Top	8.0000	62.0500	496.4000	0.1667	26.0237	5417.8830	5418.0497
	Cover Plate Bottom	0.0000	0.0000	0.0000	0.0000	36.0263	0.0000	0.0000
<b>Total</b>		<b>48.61</b>		<b>1751.33</b>	<b>7398.43</b>		<b>21454.29</b>	<b>28852.72</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	36.0263	in	S <sub>top</sub> =	1098.16	in <sup>3</sup>	y-bar =	36.0263	in	S <sub>top</sub> =	1098.16	in <sup>3</sup>
I <sub>x</sub> =	28852.72	in <sup>4</sup>	S <sub>bottom</sub> =	800.88	in <sup>3</sup>	I <sub>x</sub> =	28852.72	in <sup>4</sup>	S <sub>bottom</sub> =	800.88	in <sup>3</sup>
C <sub>top</sub> =	26.2737	in	A =	48.6125	in <sup>2</sup>	C <sub>top</sub> =	26.2737	in	A =	48.6125	in <sup>2</sup>
C <sub>bottom</sub> =	36.0263	in	r <sub>x</sub> =	24.3624	in	C <sub>bottom</sub> =	36.0263	in	r <sub>x</sub> =	24.3624	in
J =	2.5704		Z =	1074.8238	in <sup>3</sup>	Z =	1074.8238	in <sup>3</sup>			



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Date 3/23/2012  
 Date 4/2/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	2.2500	4.8125	10.8281	6.7500	3.1875	22.8604	29.6104	
	Vertical Leg	2.1094	7.6250	16.0840	0.0247	0.3750	0.2966	0.3214	
1 (Right)	Horizontal Leg	2.2500	11.1875	25.1719	6.7500	3.1875	22.8604	29.6104	
	Vertical Leg	2.1094	8.3750	17.6660	0.0247	0.3750	0.2966	0.3214	
2 (Left)	Horizontal Leg	2.2500	4.8125	10.8281	6.7500	3.1875	22.8604	29.6104	
	Vertical Leg	2.1094	7.6250	16.0840	0.0247	0.3750	0.2966	0.3214	
2 (Right)	Horizontal Leg	2.2500	11.1875	25.1719	6.7500	3.1875	22.8604	29.6104	
	Vertical Leg	2.1094	8.3750	17.6660	0.0247	0.3750	0.2966	0.3214	
3	Web Plate	23.1750	8.0000	185.4000	0.2716	0.0000	0.0000	0.2716	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	0.0000	8.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
<b>Total</b>		<b>48.61</b>		<b>388.90</b>	<b>368.70</b>		<b>92.63</b>	<b>461.33</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	57.67	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	57.67	in <sup>3</sup>
I <sub>y</sub> =	461.33	in <sup>4</sup>	S <sub>left</sub> =	57.67	in <sup>3</sup>	I <sub>y</sub> =	461.33	in <sup>4</sup>	S <sub>left</sub> =	57.67	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	48.6125	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	48.6125	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.0806	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.0806	in

Non-composite Capacities*		
	AB	AI
M	2202.42 k-ft	2202.42 k-ft
V	424.93 k	424.93 k

\*Noncompact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

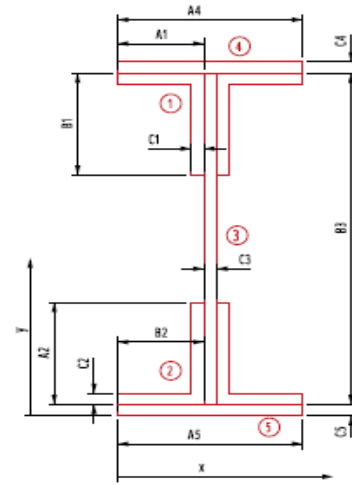
**Top Angles:**  $A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

**Bottom Angles:**  $B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

**Web Plate:**  $C_3 = 0.5000$  in  
 $*B_3 = 62.6400$  in  
 $d_o = 65.5000$  in  
 $d_o =$  stiffener spacing for shear check  
 Use "N/A" for no stiffeners

**Top Cover Plate:**  $C_4 = 0.8750$  in  
 $A_4 = 16.0000$  in

**Btm Cover Plate:**  $C_5 = 0.8750$  in  
 $A_5 = 16.0000$  in



**Girder 26-27 Section 1**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	63.1400	568.2600	0.4219	30.9450	8618.3372	8618.7591
	Vertical Leg	7.8750	60.1400	473.6025	18.0879	27.9450	6149.7688	6167.8567
2	Horizontal Leg	9.0000	1.2500	11.2500	0.4219	30.9450	8618.3372	8618.7591
	Vertical Leg	7.8750	4.2500	33.4688	18.0879	27.9450	6149.7688	6167.8567
3	Web Plate	31.3200	32.1950	1008.3474	10241.0387	0.0000	0.0000	10241.0387
4	Cover Plate Top	14.0000	63.9525	895.3350	0.8932	31.7575	14119.5433	14120.4365
	Cover Plate Bottom	14.0000	0.4375	6.1250	0.8932	31.7575	14119.5433	14120.4365
<b>Total</b>		<b>93.07</b>		<b>2996.39</b>	<b>10279.84</b>		<b>57775.30</b>	<b>68055.14</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	32.1950 in	S <sub>top</sub> =	2113.84 in <sup>3</sup>	y-bar =	32.1950 in	S <sub>top</sub> =	2113.84 in <sup>3</sup>
I <sub>x</sub> =	68055.14 in <sup>4</sup>	S <sub>bott.</sub> =	2113.84 in <sup>3</sup>	I <sub>x</sub> =	68055.14 in <sup>4</sup>	S <sub>bott.</sub> =	2113.84 in <sup>3</sup>
C <sub>top</sub> =	32.1950 in	A =	93.0700 in <sup>2</sup>	C <sub>top</sub> =	32.1950 in	A =	93.0700 in <sup>2</sup>
C <sub>bottom</sub> =	32.1950 in	r <sub>x</sub> =	27.0412 in	C <sub>bottom</sub> =	32.1950 in	r <sub>x</sub> =	27.0412 in
J =	16.0840	Z =	2376.8250 in <sup>3</sup>			Z =	<b>2376.8250 in<sup>3</sup></b>



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Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	31.3200	8.0000	250.5600	0.6525	0.0000	0.0000	0.6525	
4	Top Cover Plate	14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333	
4	Bottom Cover Plate	14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333	
<b>Total</b>		<b>93.07</b>		<b>744.56</b>	<b>1250.06</b>		<b>196.28</b>	<b>1446.33</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	180.79	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	180.79	in <sup>3</sup>
I <sub>y</sub> =	1446.33	in <sup>4</sup>	S <sub>left</sub> =	180.79	in <sup>3</sup>	I <sub>y</sub> =	1446.33	in <sup>4</sup>	S <sub>left</sub> =	180.79	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	93.0700	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	93.0700	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.9421	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.9421	in

Non-composite Capacities*		
	AB	AI
M	6536.27 k-ft	6536.27 k-ft
V	599.46 k	599.46 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 58.0800$  in

$d_o = 60.0000$  in

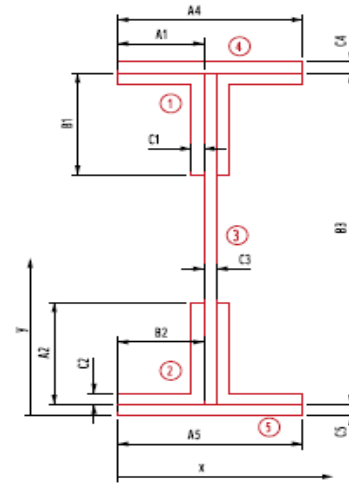
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.8750$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.8750$  in  
 $A_5 = 16.0000$  in



**Girder 26-27 Section 2**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	58.5800	527.2200	0.4219	28.6650	7395.1400	7395.5619
	Vertical Leg	7.8750	55.5800	437.6925	18.0879	25.6650	5187.2013	5205.2892
2	Horizontal Leg	9.0000	1.2500	11.2500	0.4219	28.6650	7395.1400	7395.5619
	Vertical Leg	7.8750	4.2500	33.4688	18.0879	25.6650	5187.2013	5205.2892
3	Web Plate	29.0400	29.9150	868.7316	8163.3531	0.0000	0.0000	8163.3531
4	Cover Plate Top	14.0000	59.3925	831.4950	0.8932	29.4775	12164.9221	12165.8153
	Cover Plate Bottom	14.0000	0.4375	6.1250	0.8932	29.4775	12164.9221	12165.8153
<b>Total</b>		<b>90.79</b>		<b>2715.98</b>	<b>8202.16</b>		<b>49494.53</b>	<b>57696.69</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	29.9150	in	S <sub>top</sub> =	1928.69	in <sup>3</sup>	y-bar =	29.9150	in	S <sub>top</sub> =	1928.69	in <sup>3</sup>
I <sub>x</sub> =	57696.69	n <sup>4</sup>	S <sub>bott.</sub> =	1928.69	in <sup>3</sup>	I <sub>x</sub> =	57696.69	in <sup>4</sup>	S <sub>bott.</sub> =	1928.69	in <sup>3</sup>
C <sub>top</sub> =	29.9150	in	A =	90.7900	in <sup>2</sup>	C <sub>top</sub> =	29.9150	in	A =	90.7900	in <sup>2</sup>
C <sub>bottom</sub> =	29.9150	in	r <sub>x</sub> =	25.2090	in	C <sub>bottom</sub> =	29.9150	in	r <sub>x</sub> =	25.2090	in
J =	15.8940		Z =	2167.2246	in <sup>3</sup>	Z =	2167.2246	in <sup>3</sup>			



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	29.0400	8.0000	232.3200	0.6050	0.0000	0.0000	0.6050	
4	Top Cover Plate	14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333	
4	Bottom Cover Plate	14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333	
<b>Total</b>		<b>90.79</b>		<b>726.32</b>	<b>1250.01</b>		<b>196.28</b>	<b>1446.29</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	180.79	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	180.79	in <sup>3</sup>
I <sub>y</sub> =	1446.29	in <sup>4</sup>	S <sub>left</sub> =	180.79	in <sup>3</sup>	I <sub>y</sub> =	1446.29	in <sup>4</sup>	S <sub>left</sub> =	180.79	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	90.7900	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	90.7900	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.9912	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.9912	in

Non-composite Capacities*		
	AB	AI
M	5959.87 k-ft	5959.87 k-ft
V	555.83 k	555.83 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Checked By DMP

Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 53.4000$  in

$d_o = 60.0000$  in

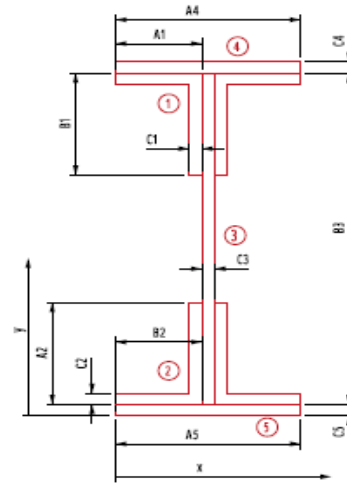
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.8750$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.8750$  in  
 $A_5 = 16.0000$  in



Girder 26-27 Section 3

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	53.9000	485.1000	0.4219	26.3250	6237.0506	6237.4725
	Vertical Leg	7.8750	50.9000	400.8375	18.0879	23.3250	4284.4380	4302.5259
2	Horizontal Leg	9.0000	1.2500	11.2500	0.4219	26.3250	6237.0506	6237.4725
	Vertical Leg	7.8750	4.2500	33.4688	18.0879	23.3250	4284.4380	4302.5259
3	Web Plate	26.7000	27.5750	736.2525	6344.7210	0.0000	0.0000	6344.7210
4	Cover Plate Top	14.0000	54.7125	765.9750	0.8932	27.1375	10310.2147	10311.1079
	Cover Plate Bottom	14.0000	0.4375	6.1250	0.8932	27.1375	10310.2147	10311.1079
<b>Total</b>		<b>88.45</b>		<b>2439.01</b>	<b>6383.53</b>		<b>41663.41</b>	<b>48046.93</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	27.5750	in	S <sub>top</sub> =	1742.41	in <sup>3</sup>	y-bar =	27.5750	in	S <sub>top</sub> =	1742.41	in <sup>3</sup>
I <sub>x</sub> =	48046.93	n <sup>4</sup>	S <sub>bott.</sub> =	1742.41	in <sup>3</sup>	I <sub>x</sub> =	48046.93	in <sup>4</sup>	S <sub>bott.</sub> =	1742.41	in <sup>3</sup>
C <sub>top</sub> =	27.5750	in	A =	88.4500	in <sup>2</sup>	C <sub>top</sub> =	27.5750	in	A =	88.4500	in <sup>2</sup>
C <sub>bottom</sub> =	27.5750	in	r <sub>x</sub> =	23.3069	in	C <sub>bottom</sub> =	27.5750	in	r <sub>x</sub> =	23.3069	in
J =	15.6990		Z =	1957.5138	in <sup>3</sup>	Z =	1957.5138	in <sup>3</sup>			





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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	26.7000	8.0000	213.6000	0.5563	0.0000	0.0000	0.5563	
4	Top Cover Plate	14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333	
4	Bottom Cover Plate	14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333	
<b>Total</b>		<b>88.45</b>		<b>707.60</b>	<b>1249.96</b>		<b>196.28</b>	<b>1446.24</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	180.78	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	180.78	in <sup>3</sup>
I <sub>y</sub> =	1446.24	in <sup>4</sup>	S <sub>left</sub> =	180.78	in <sup>3</sup>	I <sub>y</sub> =	1446.24	in <sup>4</sup>	S <sub>left</sub> =	180.78	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	88.4500	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	88.4500	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.0436	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.0436	in

Non-composite Capacities*		
	AB	AI
M	5383.16 k-ft	5383.16 k-ft
V	511.04 k	511.04 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
------------------	-----------

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 49.5600$  in

$d_o = 54.0000$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 1.7500$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 1.7500$  in  
 $A_5 = 16.0000$  in



**Girder 26-27 Section 4**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	50.9350	458.4150	0.4219	24.4050	5360.4362	5360.8581
	Vertical Leg	7.8750	47.9350	377.4881	18.0879	21.4050	3608.1204	3626.2083
2	Horizontal Leg	9.0000	2.1250	19.1250	0.4219	24.4050	5360.4362	5360.8581
	Vertical Leg	7.8750	5.1250	40.3594	18.0879	21.4050	3608.1204	3626.2083
3	Web Plate	24.7800	26.5300	657.4134	5072.0398	0.0000	0.0000	5072.0398
4	Cover Plate Top	28.0000	52.1850	1461.1800	7.1458	25.6550	18429.0127	18436.1585
	Cover Plate Bottom	28.0000	0.8750	24.5000	7.1458	25.6550	18429.0127	18436.1585
<b>Total</b>		<b>114.53</b>		<b>3038.48</b>	<b>5123.35</b>		<b>54795.14</b>	<b>59918.49</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	26.5300 in	$S_{top} =$	2258.52 in <sup>3</sup>	y-bar =	26.5300 in	$S_{top} =$	2258.52 in <sup>3</sup>
$I_x =$	59918.49 in <sup>4</sup>	$S_{bott.} =$	2258.52 in <sup>3</sup>	$I_x =$	59918.49 in <sup>4</sup>	$S_{bott.} =$	2258.52 in <sup>3</sup>
$C_{top} =$	26.5300 in	A =	114.5300 in <sup>2</sup>	$C_{top} =$	26.5300 in	A =	114.5300 in <sup>2</sup>
$C_{bottom} =$	26.5300 in	$r_x =$	22.8729 in	$C_{bottom} =$	26.5300 in	$r_x =$	22.8729 in
J =	65.5598	Z =	2520.1230 in <sup>3</sup>	Z =	2520.1230 in <sup>3</sup>		



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	24.7800	8.0000	198.2400	0.5163	0.0000	0.0000	0.5163	
4	Top Cover Plate	28.0000	8.0000	224.0000	1194.6667	0.0000	0.0000	1194.6667	
4	Bottom Cover Plate	28.0000	8.0000	224.0000	1194.6667	0.0000	0.0000	1194.6667	
<b>Total</b>		<b>114.53</b>		<b>916.24</b>	<b>2444.59</b>		<b>196.28</b>	<b>2640.87</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	330.11	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	330.11	in <sup>3</sup>
I <sub>y</sub> =	2640.87	in <sup>4</sup>	S <sub>left</sub> =	330.11	in <sup>3</sup>	I <sub>y</sub> =	2640.87	in <sup>4</sup>	S <sub>left</sub> =	330.11	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	114.5300	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	114.5300	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.8019	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.8019	in

Non-composite Capacities*		
	AB	AI
M	6930.34 k-ft	6930.34 k-ft
V	474.29 k	474.29 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



Made By CTG  
Checked By DMP

Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 53.2800$  in

$d_o = 54.0000$  in

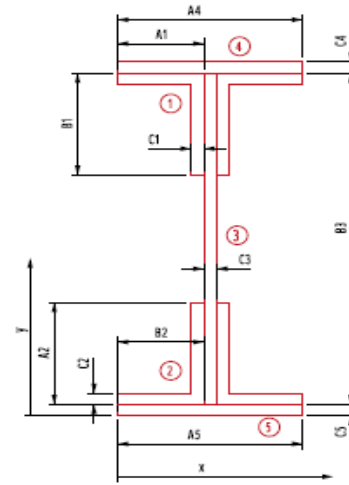
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.8750$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.8750$  in  
 $A_5 = 16.0000$  in



**Girder 26-27 Section 7**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	53.7800	484.0200	0.4219	26.2650	6208.6520	6209.0739
	Vertical Leg	7.8750	50.7800	399.8925	18.0879	23.2650	4262.4243	4280.5122
2	Horizontal Leg	9.0000	1.2500	11.2500	0.4219	26.2650	6208.6520	6209.0739
	Vertical Leg	7.8750	4.2500	33.4688	18.0879	23.2650	4262.4243	4280.5122
3	Web Plate	26.6400	27.5150	732.9996	6302.0436	0.0000	0.0000	6302.0436
4	Cover Plate Top	14.0000	54.5925	764.2950	0.8932	27.0775	10264.6741	10265.5673
	Cover Plate Bottom	14.0000	0.4375	6.1250	0.8932	27.0775	10264.6741	10265.5673
<b>Total</b>		<b>88.39</b>		<b>2432.05</b>	<b>6340.85</b>		<b>41471.50</b>	<b>47812.35</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	27.5150	in	$S_{top} = 1737.68$	in <sup>3</sup>	y-bar =	27.5150	in	$S_{top} = 1737.68$	in <sup>3</sup>		
$I_x =$	47812.35	n <sup>4</sup>	$S_{bott.} = 1737.68$	in <sup>3</sup>	$I_x =$	47812.35	in <sup>4</sup>	$S_{bott.} = 1737.68$	in <sup>3</sup>		
$C_{top} =$	27.5150	in	A =	88.3900	in <sup>2</sup>	$C_{top} =$	27.5150	in	A =	88.3900	in <sup>2</sup>
$C_{bottom} =$	27.5150	in	$r_x =$	23.2578	in	$C_{bottom} =$	27.5150	in	$r_x =$	23.2578	in
J =	15.6940		Z =	1952.2086	in <sup>3</sup>	Z =	1952.2086		in <sup>3</sup>		



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	26.6400	8.0000	213.1200	0.5550	0.0000	0.0000	0.5550	
4	Top Cover Plate	14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333	
4	Bottom Cover Plate	14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333	
<b>Total</b>		<b>88.39</b>		<b>707.12</b>	<b>1249.96</b>		<b>196.28</b>	<b>1446.24</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	180.78	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	180.78	in <sup>3</sup>
I <sub>y</sub> =	1446.24	in <sup>4</sup>	S <sub>left</sub> =	180.78	in <sup>3</sup>	I <sub>y</sub> =	1446.24	in <sup>4</sup>	S <sub>left</sub> =	180.78	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	88.3900	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	88.3900	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.0450	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.0450	in

Non-composite Capacities*		
	AB	AI
M	5368.57 k-ft	5368.57 k-ft
V	509.89 k	509.89 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 57.9600$  in

$d_o = 59.6250$  in

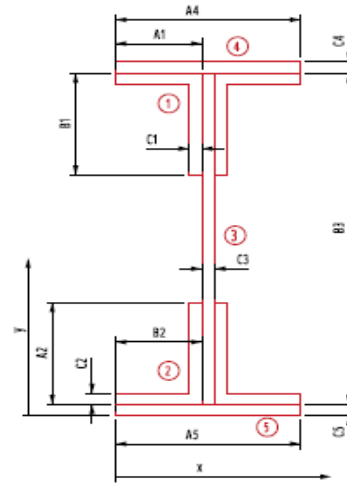
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.8750$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.8750$  in  
 $A_5 = 16.0000$  in



**Girder 26-27 Section 8**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	58.4600	526.1400	0.4219	28.6050	7364.2142	7364.6361
	Vertical Leg	7.8750	55.4600	436.7475	18.0879	25.6050	5162.9762	5181.0641
2	Horizontal Leg	9.0000	1.2500	11.2500	0.4219	28.6050	7364.2142	7364.6361
	Vertical Leg	7.8750	4.2500	33.4688	18.0879	25.6050	5162.9762	5181.0641
3	Web Plate	28.9800	29.8550	865.1979	8112.8583	0.0000	0.0000	8112.8583
4	Cover Plate Top	14.0000	59.2725	829.8150	0.8932	29.4175	12115.4503	12116.3435
	Cover Plate Bottom	14.0000	0.4375	6.1250	0.8932	29.4175	12115.4503	12116.3435
<b>Total</b>		<b>90.73</b>		<b>2708.74</b>	<b>8151.66</b>		<b>49285.28</b>	<b>57436.95</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	29.8550	in	$S_{top} = 1923.86$	in <sup>3</sup>	y-bar =	29.8550	in	$S_{top} = 1923.86$	in <sup>3</sup>		
$I_x =$	57436.95	n <sup>4</sup>	$S_{bott.} = 1923.86$	in <sup>3</sup>	$I_x =$	57436.95	in <sup>4</sup>	$S_{bott.} = 1923.86$	in <sup>3</sup>		
$C_{top} =$	29.8550	in	A =	90.7300	in <sup>2</sup>	$C_{top} =$	29.8550	in	A =	90.7300	in <sup>2</sup>
$C_{bottom} =$	29.8550	in	$r_x =$	25.1606	in	$C_{bottom} =$	29.8550	in	$r_x =$	25.1606	in
J =	15.8890		Z =	2161.7790	in <sup>3</sup>				Z =	2161.7790	in <sup>3</sup>



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	28.9800	8.0000	231.8400	0.6038	0.0000	0.0000	0.6038	
4	Top Cover Plate	14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333	
4	Bottom Cover Plate	14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333	
<b>Total</b>		<b>90.73</b>		<b>725.84</b>	<b>1250.01</b>		<b>196.28</b>	<b>1446.29</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	180.79	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	180.79	in <sup>3</sup>
I <sub>y</sub> =	1446.29	in <sup>4</sup>	S <sub>left</sub> =	180.79	in <sup>3</sup>	I <sub>y</sub> =	1446.29	in <sup>4</sup>	S <sub>left</sub> =	180.79	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	90.7300	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	90.7300	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.9926	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.9926	in

Non-composite Capacities*		
	AB	AI
M	5944.89 k-ft	5944.89 k-ft
V	554.68 k	554.68 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 62.5200$  in

$d_o = 64.6900$  in

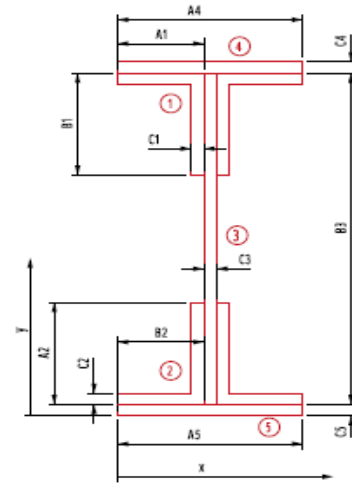
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.8750$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.8750$  in  
 $A_5 = 16.0000$  in



Girder 26-27 Section 9

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	63.0200	567.1800	0.4219	30.8850	8584.9490	8585.3709
	Vertical Leg	7.8750	60.0200	472.6575	18.0879	27.8850	6123.3891	6141.4770
2	Horizontal Leg	9.0000	1.2500	11.2500	0.4219	30.8850	8584.9490	8585.3709
	Vertical Leg	7.8750	4.2500	33.4688	18.0879	27.8850	6123.3891	6141.4770
3	Web Plate	31.2600	32.1350	1004.5401	10182.2948	0.0000	0.0000	10182.2948
4	Cover Plate Top	14.0000	63.8325	893.6550	0.8932	31.6975	14066.2411	14067.1343
	Cover Plate Bottom	14.0000	0.4375	6.1250	0.8932	31.6975	14066.2411	14067.1343
<b>Total</b>		<b>93.01</b>		<b>2988.88</b>	<b>10221.10</b>		<b>57549.16</b>	<b>67770.26</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	32.1350	in	S <sub>top</sub> = 2108.92 in <sup>3</sup>	y-bar =	32.1350	in	S <sub>top</sub> = 2108.92 in <sup>3</sup>
I <sub>x</sub> =	67770.26	in <sup>4</sup>	S <sub>bottom</sub> = 2108.92 in <sup>3</sup>	I <sub>x</sub> =	67770.26	in <sup>4</sup>	S <sub>bottom</sub> = 2108.92 in <sup>3</sup>
C <sub>top</sub> =	32.1350	in	A = 93.0100 in <sup>2</sup>	C <sub>top</sub> =	32.1350	in	A = 93.0100 in <sup>2</sup>
C <sub>bottom</sub> =	32.1350	in	r <sub>x</sub> = 26.9932 in	C <sub>bottom</sub> =	32.1350	in	r <sub>x</sub> = 26.9932 in
J =	16.0790		Z = 2371.2426 in <sup>3</sup>				Z = 2371.2426 in <sup>3</sup>





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Date 3/23/2012  
 Date 4/2/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg		4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg		3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
1 (Right)	Horizontal Leg		4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg		3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
2 (Left)	Horizontal Leg		4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg		3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
2 (Right)	Horizontal Leg		4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg		3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
3	Web Plate		31.2600	8.0000	250.0800	0.6513	0.0000	0.0000	0.6513
4	Top Cover Plate		14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333
4	Bottom Cover Plate		14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333
<b>Total</b>			<b>93.01</b>		<b>744.08</b>	<b>1250.06</b>		<b>196.28</b>	<b>1446.33</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	8.0000	in	S <sub>right</sub> =	180.79	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	180.79	in <sup>3</sup>
I <sub>y</sub> =	1446.33	in <sup>4</sup>	S <sub>left</sub> =	180.79	in <sup>3</sup>	I <sub>y</sub> =	1446.33	in <sup>4</sup>	S <sub>left</sub> =	180.79	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	93.0100	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	93.0100	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.9434	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.9434	in

Non-composite Capacities*		
	AB	AI
M	6520.92 k-ft	6520.92 k-ft
V	598.32 k	598.32 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 62.5200$  in

$d_o = 65.4400$  in

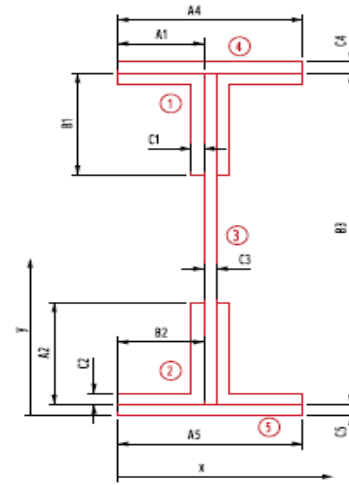
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.8750$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.8750$  in  
 $A_5 = 16.0000$  in



Girder 28-29 Section 1

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	63.0200	567.1800	0.4219	30.8850	8584.9490	8585.3709
	Vertical Leg	7.8750	60.0200	472.6575	18.0879	27.8850	6123.3891	6141.4770
2	Horizontal Leg	9.0000	1.2500	11.2500	0.4219	30.8850	8584.9490	8585.3709
	Vertical Leg	7.8750	4.2500	33.4688	18.0879	27.8850	6123.3891	6141.4770
3	Web Plate	31.2600	32.1350	1004.5401	10182.2948	0.0000	0.0000	10182.2948
4	Cover Plate Top	14.0000	63.8325	893.6550	0.8932	31.6975	14066.2411	14067.1343
	Cover Plate Bottom	14.0000	0.4375	6.1250	0.8932	31.6975	14066.2411	14067.1343
<b>Total</b>		<b>93.01</b>		<b>2988.88</b>	<b>10221.10</b>		<b>57549.16</b>	<b>67770.26</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	32.1350	in	S <sub>top</sub> =	2108.92	in <sup>3</sup>	y-bar =	32.1350	in	S <sub>top</sub> =	2108.92	in <sup>3</sup>
I <sub>x</sub> =	67770.26	n <sup>4</sup>	S <sub>bottom</sub> =	2108.92	in <sup>3</sup>	I <sub>x</sub> =	67770.26	in <sup>4</sup>	S <sub>bottom</sub> =	2108.92	in <sup>3</sup>
C <sub>top</sub> =	32.1350	in	A =	93.0100	in <sup>2</sup>	C <sub>top</sub> =	32.1350	in	A =	93.0100	in <sup>2</sup>
C <sub>bottom</sub> =	32.1350	in	r <sub>x</sub> =	26.9932	in	C <sub>bottom</sub> =	32.1350	in	r <sub>x</sub> =	26.9932	in
J =	16.0790		Z =	2371.2426	in <sup>3</sup>	Z =	2371.2426	in <sup>3</sup>			



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	31.2600	8.0000	250.0800	0.6513	0.0000	0.0000	0.6513	
4	Top Cover Plate	14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333	
4	Bottom Cover Plate	14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333	
<b>Total</b>		<b>93.01</b>		<b>744.08</b>	<b>1250.06</b>		<b>196.28</b>	<b>1446.33</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	180.79	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	180.79	in <sup>3</sup>
I <sub>y</sub> =	1446.33	in <sup>4</sup>	S <sub>left</sub> =	180.79	in <sup>3</sup>	I <sub>y</sub> =	1446.33	in <sup>4</sup>	S <sub>left</sub> =	180.79	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	93.0100	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	93.0100	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.9434	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.9434	in

Non-composite Capacities*		
	AB	AI
M	6520.92 k-ft	6520.92 k-ft
V	598.32 k	598.32 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
------------------	-----------

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 57.9600$  in

$d_o = 60.0000$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.8750$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.8750$  in  
 $A_5 = 16.0000$  in



Girder 28-29 Section 2

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	58.4600	526.1400	0.4219	28.6050	7364.2142	7364.6361
	Vertical Leg	7.8750	55.4600	436.7475	18.0879	25.6050	5162.9762	5181.0641
2	Horizontal Leg	9.0000	1.2500	11.2500	0.4219	28.6050	7364.2142	7364.6361
	Vertical Leg	7.8750	4.2500	33.4688	18.0879	25.6050	5162.9762	5181.0641
3	Web Plate	28.9800	29.8550	865.1979	8112.8583	0.0000	0.0000	8112.8583
4	Cover Plate Top	14.0000	59.2725	829.8150	0.8932	29.4175	12115.4503	12116.3435
	Cover Plate Bottom	14.0000	0.4375	6.1250	0.8932	29.4175	12115.4503	12116.3435
<b>Total</b>		<b>90.73</b>		<b>2708.74</b>	<b>8151.66</b>		<b>49285.28</b>	<b>57436.95</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	29.8550	in	S <sub>top</sub> =	1923.86	in <sup>3</sup>	y-bar =	29.8550	in	S <sub>top</sub> =	1923.86	in <sup>3</sup>
I <sub>x</sub> =	57436.95	n <sup>4</sup>	S <sub>bott.</sub> =	1923.86	in <sup>3</sup>	I <sub>x</sub> =	57436.95	in <sup>4</sup>	S <sub>bott.</sub> =	1923.86	in <sup>3</sup>
C <sub>top</sub> =	29.8550	in	A =	90.7300	in <sup>2</sup>	C <sub>top</sub> =	29.8550	in	A =	90.7300	in <sup>2</sup>
C <sub>bottom</sub> =	29.8550	in	r <sub>x</sub> =	25.1606	in	C <sub>bottom</sub> =	29.8550	in	r <sub>x</sub> =	25.1606	in
J =	15.8890		Z =	2161.7790	in <sup>3</sup>	Z =	2161.7790	in <sup>3</sup>			



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	28.9800	8.0000	231.8400	0.6038	0.0000	0.0000	0.6038	
4	Top Cover Plate	14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333	
4	Bottom Cover Plate	14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333	
<b>Total</b>		<b>90.73</b>		<b>725.84</b>	<b>1250.01</b>		<b>196.28</b>	<b>1446.29</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	180.79	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	180.79	in <sup>3</sup>
I <sub>y</sub> =	1446.29	in <sup>4</sup>	S <sub>left</sub> =	180.79	in <sup>3</sup>	I <sub>y</sub> =	1446.29	in <sup>4</sup>	S <sub>left</sub> =	180.79	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	90.7300	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	90.7300	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.9926	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.9926	in

Non-composite Capacities*		
	AB	AI
M	5944.89 k-ft	5944.89 k-ft
V	554.68 k	554.68 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 53.2800$  in

$d_o = 54.0000$  in

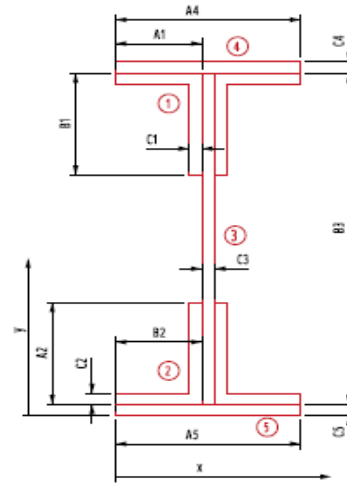
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.8750$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.8750$  in  
 $A_5 = 16.0000$  in



**Girder 28-29 Section 3**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	53.7800	484.0200	0.4219	26.2650	6208.6520	6209.0739
	Vertical Leg	7.8750	50.7800	399.8925	18.0879	23.2650	4262.4243	4280.5122
2	Horizontal Leg	9.0000	1.2500	11.2500	0.4219	26.2650	6208.6520	6209.0739
	Vertical Leg	7.8750	4.2500	33.4688	18.0879	23.2650	4262.4243	4280.5122
3	Web Plate	26.6400	27.5150	732.9996	6302.0436	0.0000	0.0000	6302.0436
4	Cover Plate Top	14.0000	54.5925	764.2950	0.8932	27.0775	10264.6741	10265.5673
	Cover Plate Bottom	14.0000	0.4375	6.1250	0.8932	27.0775	10264.6741	10265.5673
<b>Total</b>		<b>88.39</b>		<b>2432.05</b>	<b>6340.85</b>		<b>41471.50</b>	<b>47812.35</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	27.5150	in	S <sub>top</sub> =	1737.68	in <sup>3</sup>	y-bar =	27.5150	in	S <sub>top</sub> =	1737.68	in <sup>3</sup>
I <sub>x</sub> =	47812.35	n <sup>4</sup>	S <sub>bott.</sub> =	1737.68	in <sup>3</sup>	I <sub>x</sub> =	47812.35	in <sup>4</sup>	S <sub>bott.</sub> =	1737.68	in <sup>3</sup>
C <sub>top</sub> =	27.5150	in	A =	88.3900	in <sup>2</sup>	C <sub>top</sub> =	27.5150	in	A =	88.3900	in <sup>2</sup>
C <sub>bottom</sub> =	27.5150	in	r <sub>x</sub> =	23.2578	in	C <sub>bottom</sub> =	27.5150	in	r <sub>x</sub> =	23.2578	in
J =	15.6940		Z =	1952.2086	in <sup>3</sup>	Z =	1952.2086		Z =	1952.2086	in <sup>3</sup>



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Date 3/23/2012  
 Date 4/2/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	26.6400	8.0000	213.1200	0.5550	0.0000	0.0000	0.5550	
4	Top Cover Plate	14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333	
4	Bottom Cover Plate	14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333	
<b>Total</b>		<b>88.39</b>		<b>707.12</b>	<b>1249.96</b>		<b>196.28</b>	<b>1446.24</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	180.78	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	180.78	in <sup>3</sup>
I <sub>y</sub> =	1446.24	in <sup>4</sup>	S <sub>left</sub> =	180.78	in <sup>3</sup>	I <sub>y</sub> =	1446.24	in <sup>4</sup>	S <sub>left</sub> =	180.78	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	88.3900	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	88.3900	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.0450	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.0450	in

Non-composite Capacities*		
	AB	AI
M	5368.57 k-ft	5368.57 k-ft
V	509.89 k	509.89 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
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AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 49.5600$  in

$d_o = 54.0000$  in

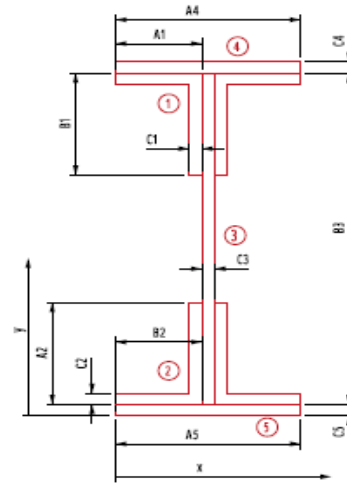
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 1.7500$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 1.7500$  in  
 $A_5 = 16.0000$  in



**Girder 28-29 Section 4**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	50.9350	458.4150	0.4219	24.4050	5360.4362	5360.8581
	Vertical Leg	7.8750	47.9350	377.4881	18.0879	21.4050	3608.1204	3626.2083
2	Horizontal Leg	9.0000	2.1250	19.1250	0.4219	24.4050	5360.4362	5360.8581
	Vertical Leg	7.8750	5.1250	40.3594	18.0879	21.4050	3608.1204	3626.2083
3	Web Plate	24.7800	26.5300	657.4134	5072.0398	0.0000	0.0000	5072.0398
4	Cover Plate Top	28.0000	52.1850	1461.1800	7.1458	25.6550	18429.0127	18436.1585
	Cover Plate Bottom	28.0000	0.8750	24.5000	7.1458	25.6550	18429.0127	18436.1585
<b>Total</b>		<b>114.53</b>		<b>3038.48</b>	<b>5123.35</b>		<b>54795.14</b>	<b>59918.49</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	26.5300 in	S <sub>top</sub> =	2258.52 in <sup>3</sup>	y-bar =	26.5300 in	S <sub>top</sub> =	2258.52 in <sup>3</sup>
I <sub>x</sub> =	59918.49 in <sup>4</sup>	S <sub>bott.</sub> =	2258.52 in <sup>3</sup>	I <sub>x</sub> =	59918.49 in <sup>4</sup>	S <sub>bott.</sub> =	2258.52 in <sup>3</sup>
C <sub>top</sub> =	26.5300 in	A =	114.5300 in <sup>2</sup>	C <sub>top</sub> =	26.5300 in	A =	114.5300 in <sup>2</sup>
C <sub>bottom</sub> =	26.5300 in	r <sub>x</sub> =	22.8729 in	C <sub>bottom</sub> =	26.5300 in	r <sub>x</sub> =	22.8729 in
J =	65.5598	Z =	2520.1230 in <sup>3</sup>	Z =	2520.1230 in <sup>3</sup>		





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Date 3/23/2012  
 Date 4/2/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	24.7800	8.0000	198.2400	0.5163	0.0000	0.0000	0.5163	
4	Top Cover Plate	28.0000	8.0000	224.0000	1194.6667	0.0000	0.0000	1194.6667	
4	Bottom Cover Plate	28.0000	8.0000	224.0000	1194.6667	0.0000	0.0000	1194.6667	
<b>Total</b>		<b>114.53</b>		<b>916.24</b>	<b>2444.59</b>		<b>196.28</b>	<b>2640.87</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	330.11	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	330.11	in <sup>3</sup>
I <sub>y</sub> =	2640.87	in <sup>4</sup>	S <sub>left</sub> =	330.11	in <sup>3</sup>	I <sub>y</sub> =	2640.87	in <sup>4</sup>	S <sub>left</sub> =	330.11	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	114.5300	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	114.5300	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.8019	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.8019	in

Non-composite Capacities*		
	AB	AI
M	6930.34 k-ft	6930.34 k-ft
V	474.29 k	474.29 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
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AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

**Top Angles:**

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

**Bottom Angles:**

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

**Web Plate:**

$C_3 = 0.5000$  in  
 $*B_3 = 53.2800$  in

$d_o = 60.0000$  in

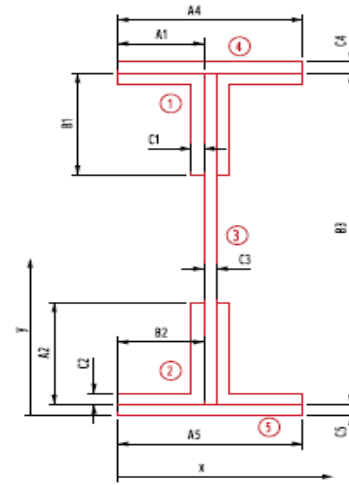
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

**Top Cover Plate:**

$C_4 = 0.8750$  in  
 $A_4 = 16.0000$  in

**Btm Cover Plate:**

$C_5 = 0.8750$  in  
 $A_5 = 16.0000$  in



**Girder 28-29 Section 5**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	53.7800	484.0200	0.4219	26.2650	6208.6520	6209.0739
	Vertical Leg	7.8750	50.7800	399.8925	18.0879	23.2650	4262.4243	4280.5122
2	Horizontal Leg	9.0000	1.2500	11.2500	0.4219	26.2650	6208.6520	6209.0739
	Vertical Leg	7.8750	4.2500	33.4688	18.0879	23.2650	4262.4243	4280.5122
3	Web Plate	26.6400	27.5150	732.9996	6302.0436	0.0000	0.0000	6302.0436
4	Cover Plate Top	14.0000	54.5925	764.2950	0.8932	27.0775	10264.6741	10265.5673
	Cover Plate Bottom	14.0000	0.4375	6.1250	0.8932	27.0775	10264.6741	10265.5673
<b>Total</b>		<b>88.39</b>		<b>2432.05</b>	<b>6340.85</b>		<b>41471.50</b>	<b>47812.35</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	27.5150	in	S <sub>top</sub> = 1737.68 in <sup>3</sup>	y-bar =	27.5150	in	S <sub>top</sub> = 1737.68 in <sup>3</sup>
I <sub>x</sub> =	47812.35	in <sup>4</sup>	S <sub>bottom</sub> = 1737.68 in <sup>3</sup>	I <sub>x</sub> =	47812.35	in <sup>4</sup>	S <sub>bottom</sub> = 1737.68 in <sup>3</sup>
C <sub>top</sub> =	27.5150	in	A = 88.3900 in <sup>2</sup>	C <sub>top</sub> =	27.5150	in	A = 88.3900 in <sup>2</sup>
C <sub>bottom</sub> =	27.5150	in	r <sub>x</sub> = 23.2578 in	C <sub>bottom</sub> =	27.5150	in	r <sub>x</sub> = 23.2578 in
J =	15.6940		Z = 1952.2086 in <sup>3</sup>				Z = 1952.2086 in <sup>3</sup>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	26.6400	8.0000	213.1200	0.5550	0.0000	0.0000	0.5550	
4	Top Cover Plate	14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333	
4	Bottom Cover Plate	14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333	
<b>Total</b>		<b>88.39</b>		<b>707.12</b>	<b>1249.96</b>		<b>196.28</b>	<b>1446.24</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	180.78	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	180.78	in <sup>3</sup>
I <sub>y</sub> =	1446.24	in <sup>4</sup>	S <sub>left</sub> =	180.78	in <sup>3</sup>	I <sub>y</sub> =	1446.24	in <sup>4</sup>	S <sub>left</sub> =	180.78	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	88.3900	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	88.3900	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.0450	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.0450	in

Non-composite Capacities*		
	AB	AI
M	5368.57 k-ft	5368.57 k-ft
V	509.89 k	509.89 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
------------------	-----------

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 57.9600$  in

$d_o = 60.0000$  in

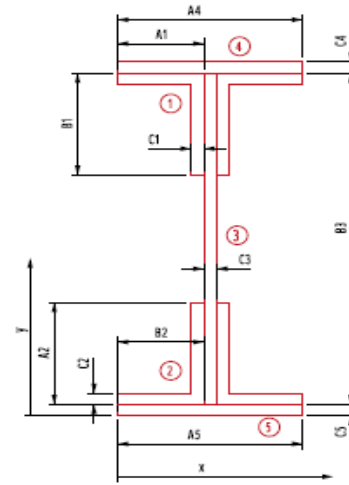
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.8750$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.8750$  in  
 $A_5 = 16.0000$  in



**Girder 28-29 Section 6**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg		9.0000	58.4600	526.1400	0.4219	28.6050	7364.2142	7364.6361
	Vertical Leg		7.8750	55.4600	436.7475	18.0879	25.6050	5162.9762	5181.0641
2	Horizontal Leg		9.0000	1.2500	11.2500	0.4219	28.6050	7364.2142	7364.6361
	Vertical Leg		7.8750	4.2500	33.4688	18.0879	25.6050	5162.9762	5181.0641
3	Web Plate		28.9800	29.8550	865.1979	8112.8583	0.0000	0.0000	8112.8583
4	Cover Plate Top		14.0000	59.2725	829.8150	0.8932	29.4175	12115.4503	12116.3435
	Cover Plate Bottom		14.0000	0.4375	6.1250	0.8932	29.4175	12115.4503	12116.3435
<b>Total</b>			<b>90.73</b>		<b>2708.74</b>	<b>8151.66</b>		<b>49285.28</b>	<b>57436.95</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	29.8550	in	$S_{top} = 1923.86$	in <sup>3</sup>	y-bar =	29.8550	in	$S_{top} = 1923.86$	in <sup>3</sup>		
$I_x =$	57436.95	n <sup>4</sup>	$S_{bott.} = 1923.86$	in <sup>3</sup>	$I_x =$	57436.95	in <sup>4</sup>	$S_{bott.} = 1923.86$	in <sup>3</sup>		
$C_{top} =$	29.8550	in	A =	90.7300	in <sup>2</sup>	$C_{top} =$	29.8550	in	A =	90.7300	in <sup>2</sup>
$C_{bottom} =$	29.8550	in	$r_x =$	25.1606	in	$C_{bottom} =$	29.8550	in	$r_x =$	25.1606	in
J =	15.8890		Z =	2161.7790	in <sup>3</sup>				Z =	2161.7790	in <sup>3</sup>



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Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	28.9800	8.0000	231.8400	0.6038	0.0000	0.0000	0.6038	
4	Top Cover Plate	14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333	
4	Bottom Cover Plate	14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333	
<b>Total</b>		<b>90.73</b>		<b>725.84</b>	<b>1250.01</b>		<b>196.28</b>	<b>1446.29</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	180.79	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	180.79	in <sup>3</sup>
I <sub>y</sub> =	1446.29	in <sup>4</sup>	S <sub>left</sub> =	180.79	in <sup>3</sup>	I <sub>y</sub> =	1446.29	in <sup>4</sup>	S <sub>left</sub> =	180.79	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	90.7300	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	90.7300	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.9926	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.9926	in

Non-composite Capacities*		
	AB	AI
M	5944.89 k-ft	5944.89 k-ft
V	554.68 k	554.68 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 62.5200$  in

$d_o = 66.2500$  in

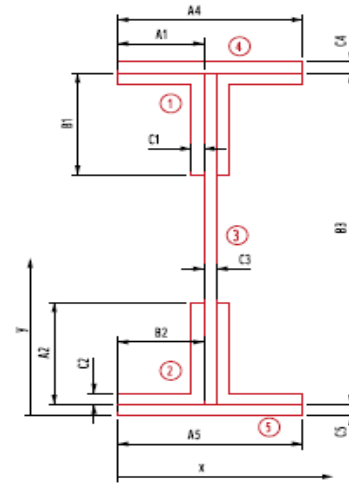
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.8750$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.8750$  in  
 $A_5 = 16.0000$  in



**Girder 28-29 Section 7**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	63.0200	567.1800	0.4219	30.8850	8584.9490	8585.3709
	Vertical Leg	7.8750	60.0200	472.6575	18.0879	27.8850	6123.3891	6141.4770
2	Horizontal Leg	9.0000	1.2500	11.2500	0.4219	30.8850	8584.9490	8585.3709
	Vertical Leg	7.8750	4.2500	33.4688	18.0879	27.8850	6123.3891	6141.4770
3	Web Plate	31.2600	32.1350	1004.5401	10182.2948	0.0000	0.0000	10182.2948
4	Cover Plate Top	14.0000	63.8325	893.6550	0.8932	31.6975	14066.2411	14067.1343
	Cover Plate Bottom	14.0000	0.4375	6.1250	0.8932	31.6975	14066.2411	14067.1343
<b>Total</b>		<b>93.01</b>		<b>2988.88</b>	<b>10221.10</b>		<b>57549.16</b>	<b>67770.26</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	32.1350	in	$S_{top} = 2108.92$	in <sup>3</sup>	y-bar =	32.1350	in	$S_{top} = 2108.92$	in <sup>3</sup>		
$I_x =$	67770.26	n <sup>4</sup>	$S_{bott.} = 2108.92$	in <sup>3</sup>	$I_x =$	67770.26	in <sup>4</sup>	$S_{bott.} = 2108.92$	in <sup>3</sup>		
$C_{top} =$	32.1350	in	A =	93.0100	in <sup>2</sup>	$C_{top} =$	32.1350	in	A =	93.0100	in <sup>2</sup>
$C_{bottom} =$	32.1350	in	$r_x =$	26.9932	in	$C_{bottom} =$	32.1350	in	$r_x =$	26.9932	in
J =	16.0790		Z =	2371.2426	in <sup>3</sup>			Z =	2371.2426	in <sup>3</sup>	



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Date 3/23/2012  
 Date 4/2/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	31.2600	8.0000	250.0800	0.6513	0.0000	0.0000	0.6513	
4	Top Cover Plate	14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333	
4	Bottom Cover Plate	14.0000	8.0000	112.0000	597.3333	0.0000	0.0000	597.3333	
<b>Total</b>		<b>93.01</b>		<b>744.08</b>	<b>1250.06</b>		<b>196.28</b>	<b>1446.33</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	180.79	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	180.79	in <sup>3</sup>
I <sub>y</sub> =	1446.33	in <sup>4</sup>	S <sub>left</sub> =	180.79	in <sup>3</sup>	I <sub>y</sub> =	1446.33	in <sup>4</sup>	S <sub>left</sub> =	180.79	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	93.0100	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	93.0100	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.9434	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.9434	in

Non-composite Capacities*		
	AB	AI
M	6520.92 k-ft	6520.92 k-ft
V	598.32 k	598.32 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
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AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 60.0000$  in

$d_o = 69.3100$  in

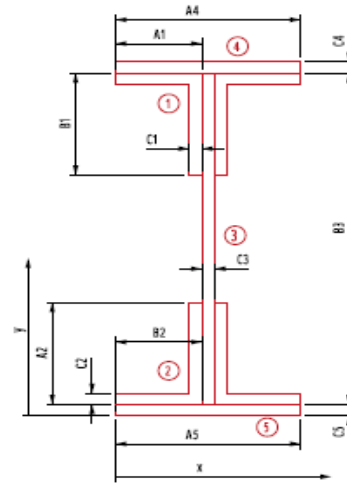
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



**Girder 29-30 Section 1**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	60.1250	541.1250	0.4219	29.6250	7898.7656	7899.1875
	Vertical Leg	7.8750	57.1250	449.8594	18.0879	26.6250	5582.5137	5600.6016
2	Horizontal Leg	9.0000	0.8750	7.8750	0.4219	29.6250	7898.7656	7899.1875
	Vertical Leg	7.8750	3.8750	30.5156	18.0879	26.6250	5582.5137	5600.6016
3	Web Plate	30.0000	30.5000	915.0000	9000.0000	0.0000	0.0000	9000.0000
4	Cover Plate Top	8.0000	60.7500	486.0000	0.1667	30.2500	7320.5000	7320.6667
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	30.2500	7320.5000	7320.6667
<b>Total</b>		<b>79.75</b>		<b>2432.38</b>	<b>9037.35</b>		<b>41603.56</b>	<b>50640.91</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	30.5000	in	S <sub>top</sub> = 1660.36 in <sup>3</sup>	y-bar =	30.5000	in	S <sub>top</sub> = 1660.36 in <sup>3</sup>
I <sub>x</sub> =	50640.91	in <sup>4</sup>	S <sub>bottom</sub> = 1660.36 in <sup>3</sup>	I <sub>x</sub> =	50640.91	in <sup>4</sup>	S <sub>bottom</sub> = 1660.36 in <sup>3</sup>
C <sub>top</sub> =	30.5000	in	A = 79.7500 in <sup>2</sup>	C <sub>top</sub> =	30.5000	in	A = 79.7500 in <sup>2</sup>
C <sub>bottom</sub> =	30.5000	in	r <sub>x</sub> = 25.1991 in	C <sub>bottom</sub> =	30.5000	in	r <sub>x</sub> = 25.1991 in
J =	10.1615		Z = 1886.5938 in <sup>3</sup>				Z = 1886.5938 in <sup>3</sup>





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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
3	Web Plate	30.0000	8.0000	240.0000	0.6250	0.0000	0.0000	0.6250
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333
4	Bottom Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333
<b>Total</b>		<b>79.75</b>		<b>638.00</b>	<b>738.03</b>		<b>196.28</b>	<b>934.31</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	116.79	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	116.79	in <sup>3</sup>
I <sub>y</sub> =	934.31	in <sup>4</sup>	S <sub>left</sub> =	116.79	in <sup>3</sup>	I <sub>y</sub> =	934.31	in <sup>4</sup>	S <sub>left</sub> =	116.79	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	79.7500	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	79.7500	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.4228	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.4228	in

Non-composite Capacities*		
	AB	AI
M	5188.13 k-ft	5188.13 k-ft
V	574.20 k	574.20 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
------------------	-----------

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 53.0400$  in

$d_o = 60.0000$  in

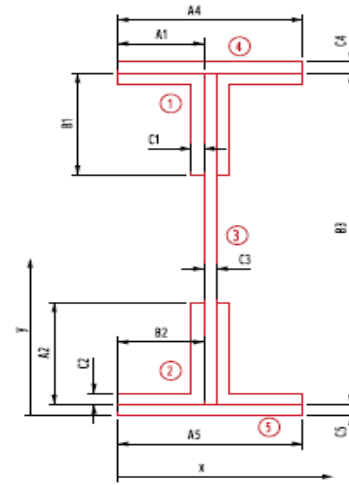
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



**Girder 29-30 Section 2**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	53.1650	478.4850	0.4219	26.1450	6152.0492	6152.4711
	Vertical Leg	7.8750	50.1650	395.0494	18.0879	23.1450	4218.5668	4236.6547
2	Horizontal Leg	9.0000	0.8750	7.8750	0.4219	26.1450	6152.0492	6152.4711
	Vertical Leg	7.8750	3.8750	30.5156	18.0879	23.1450	4218.5668	4236.6547
3	Web Plate	26.5200	27.0200	716.5704	6217.2639	0.0000	0.0000	6217.2639
4	Cover Plate Top	8.0000	53.7900	430.3200	0.1667	26.7700	5733.0632	5733.2299
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	26.7700	5733.0632	5733.2299
<b>Total</b>		<b>76.27</b>		<b>2060.82</b>	<b>6254.62</b>		<b>32207.36</b>	<b>38461.98</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	27.0200	in	$S_{top} = 1423.46$	in <sup>3</sup>	y-bar =	27.0200	in	$S_{top} = 1423.46$	in <sup>3</sup>		
$I_x =$	38461.98	n <sup>4</sup>	$S_{bott.} = 1423.46$	in <sup>3</sup>	$I_x =$	38461.98	in <sup>4</sup>	$S_{bott.} = 1423.46$	in <sup>3</sup>		
$C_{top} =$	27.0200	in	A =	76.2700	in <sup>2</sup>	$C_{top} =$	27.0200	in	A =	76.2700	in <sup>2</sup>
$C_{bottom} =$	27.0200	in	$r_x =$	22.4563	in	$C_{bottom} =$	27.0200	in	$r_x =$	22.4563	in
J =	9.8715		Z =	1615.1190	in <sup>3</sup>	Z =	1615.1190	in <sup>3</sup>			



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	26.5200	8.0000	212.1600	0.5525	0.0000	0.0000	0.5525	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>76.27</b>		<b>610.16</b>	<b>737.96</b>		<b>196.28</b>	<b>934.23</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	116.78	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	116.78	in <sup>3</sup>
I <sub>y</sub> =	934.23	in <sup>4</sup>	S <sub>left</sub> =	116.78	in <sup>3</sup>	I <sub>y</sub> =	934.23	in <sup>4</sup>	S <sub>left</sub> =	116.78	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	76.2700	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	76.2700	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.4999	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.4999	in

Non-composite Capacities*		
	AB	AI
M	4441.58 k-ft	4441.58 k-ft
V	507.59 k	507.59 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/23/2012  
 Date 4/2/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

**Top Angles:**  $A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

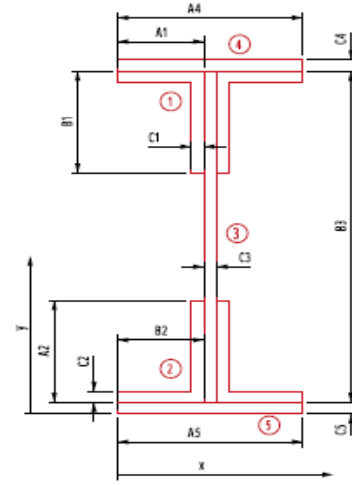
**Bottom Angles:**  $B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

**Web Plate:**  $C_3 = 0.5000$  in  
 $*B_3 = 48.0000$  in

$d_o = 54.0000$  in  
 $d_o =$  stiffener spacing for shear check  
 Use "N/A" for no stiffeners

**Top Cover Plate:**  $C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

**Btm Cover Plate:**  $C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



**Girder 29-30 Section 3**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	48.1250	433.1250	0.4219	23.6250	5023.2656	5023.6875
	Vertical Leg	7.8750	45.1250	355.3594	18.0879	20.6250	3349.9512	3368.0391
2	Horizontal Leg	9.0000	0.8750	7.8750	0.4219	23.6250	5023.2656	5023.6875
	Vertical Leg	7.8750	3.8750	30.5156	18.0879	20.6250	3349.9512	3368.0391
3	Web Plate	24.0000	24.5000	588.0000	4608.0000	0.0000	0.0000	4608.0000
4	Cover Plate Top	8.0000	48.7500	390.0000	0.1667	24.2500	4704.5000	4704.6667
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	24.2500	4704.5000	4704.6667
<b>Total</b>		<b>73.75</b>		<b>1806.88</b>	<b>4645.35</b>		<b>26155.43</b>	<b>30800.79</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	24.5000 in	S <sub>top</sub> =	1257.17 in <sup>3</sup>	y-bar =	24.5000 in	S <sub>top</sub> =	1257.17 in <sup>3</sup>
I <sub>x</sub> =	30800.79 in <sup>4</sup>	S <sub>bott.</sub> =	1257.17 in <sup>3</sup>	I <sub>x</sub> =	30800.79 in <sup>4</sup>	S <sub>bott.</sub> =	1257.17 in <sup>3</sup>
C <sub>top</sub> =	24.5000 in	A =	73.7500 in <sup>2</sup>	C <sub>top</sub> =	24.5000 in	A =	73.7500 in <sup>2</sup>
C <sub>bottom</sub> =	24.5000 in	r <sub>x</sub> =	20.4362 in	C <sub>bottom</sub> =	24.5000 in	r <sub>x</sub> =	20.4362 in
J =	9.6615	Z =	1426.0938 in <sup>3</sup>	Z =	1426.0938		in <sup>3</sup>



Made By CTG  
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Date 3/23/2012  
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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	24.0000	8.0000	192.0000	0.5000	0.0000	0.0000	0.5000	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>73.75</b>		<b>590.00</b>	<b>737.90</b>		<b>196.28</b>	<b>934.18</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	116.77	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	116.77	in <sup>3</sup>
I <sub>y</sub> =	934.18	in <sup>4</sup>	S <sub>left</sub> =	116.77	in <sup>3</sup>	I <sub>y</sub> =	934.18	in <sup>4</sup>	S <sub>left</sub> =	116.77	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	73.7500	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	73.7500	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5591	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5591	in

Non-composite Capacities*		
	AB	AI
M	3921.76 k-ft	3921.76 k-ft
V	459.36 k	459.36 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
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AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 53.2800$  in

$d_o = 61.6250$  in

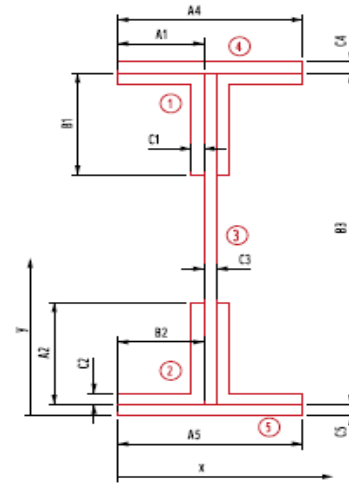
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



**Girder 29-30 Section 4**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	53.4050	480.6450	0.4219	26.2650	6208.6520	6209.0739
	Vertical Leg	7.8750	50.4050	396.9394	18.0879	23.2650	4262.4243	4280.5122
2	Horizontal Leg	9.0000	0.8750	7.8750	0.4219	26.2650	6208.6520	6209.0739
	Vertical Leg	7.8750	3.8750	30.5156	18.0879	23.2650	4262.4243	4280.5122
3	Web Plate	26.6400	27.1400	723.0096	6302.0436	0.0000	0.0000	6302.0436
4	Cover Plate Top	8.0000	54.0300	432.2400	0.1667	26.8900	5784.5768	5784.7435
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	26.8900	5784.5768	5784.7435
<b>Total</b>		<b>76.39</b>		<b>2073.22</b>	<b>6339.40</b>		<b>32511.31</b>	<b>38850.70</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	27.1400	in	$S_{top} = 1431.49$	in <sup>3</sup>	y-bar =	27.1400	in	$S_{top} = 1431.49$	in <sup>3</sup>		
$I_x =$	38850.70	n <sup>4</sup>	$S_{bott.} = 1431.49$	in <sup>3</sup>	$I_x =$	38850.70	in <sup>4</sup>	$S_{bott.} = 1431.49$	in <sup>3</sup>		
$C_{top} =$	27.1400	in	A =	76.3900	in <sup>2</sup>	$C_{top} =$	27.1400	in	A =	76.3900	in <sup>2</sup>
$C_{bottom} =$	27.1400	in	$r_x =$	22.5518	in	$C_{bottom} =$	27.1400	in	$r_x =$	22.5518	in
J =	9.8815		Z =	1624.2786	in <sup>3</sup>				Z =	1624.2786	in <sup>3</sup>



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	26.6400	8.0000	213.1200	0.5550	0.0000	0.0000	0.5550	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>76.39</b>		<b>611.12</b>	<b>737.96</b>		<b>196.28</b>	<b>934.24</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	8.0000	in	S <sub>right</sub> = 116.78 in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> = 116.78 in <sup>3</sup>
I <sub>y</sub> =	934.24	in <sup>4</sup>	S <sub>left</sub> = 116.78 in <sup>3</sup>	I <sub>y</sub> =	934.24	in <sup>4</sup>	S <sub>left</sub> = 116.78 in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A = 76.3900 in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A = 76.3900 in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> = 3.4971 in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> = 3.4971 in

Non-composite Capacities*		
	AB	AI
M	4466.77 k-ft	4466.77 k-ft
V	509.89 k	509.89 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
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AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 60.2400$  in

$d_o = 65.1875$  in

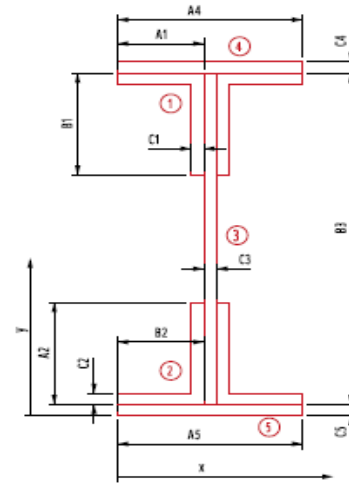
$d_o$  = stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



Girder 29-30 Section 5

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	60.3650	543.2850	0.4219	29.7450	7962.8852	7963.3071
	Vertical Leg	7.8750	57.3650	451.7494	18.0879	26.7450	5632.9483	5651.0362
2	Horizontal Leg	9.0000	0.8750	7.8750	0.4219	29.7450	7962.8852	7963.3071
	Vertical Leg	7.8750	3.8750	30.5156	18.0879	26.7450	5632.9483	5651.0362
3	Web Plate	30.1200	30.6200	922.2744	9108.4326	0.0000	0.0000	9108.4326
4	Cover Plate Top	8.0000	60.9900	487.9200	0.1667	30.3700	7378.6952	7378.8619
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	30.3700	7378.6952	7378.8619
<b>Total</b>		<b>79.87</b>		<b>2445.62</b>	<b>9145.79</b>		<b>41949.06</b>	<b>51094.84</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	30.6200 in	S <sub>top</sub> =	1668.68 in <sup>3</sup>	y-bar =	30.6200 in	S <sub>top</sub> =	1668.68 in <sup>3</sup>
I <sub>x</sub> =	51094.84 in <sup>4</sup>	S <sub>bott.</sub> =	1668.68 in <sup>3</sup>	I <sub>x</sub> =	51094.84 in <sup>4</sup>	S <sub>bott.</sub> =	1668.68 in <sup>3</sup>
C <sub>top</sub> =	30.6200 in	A =	79.8700 in <sup>2</sup>	C <sub>top</sub> =	30.6200 in	A =	79.8700 in <sup>2</sup>
C <sub>bottom</sub> =	30.6200 in	r <sub>x</sub> =	25.2928 in	C <sub>bottom</sub> =	30.6200 in	r <sub>x</sub> =	25.2928 in
J =	10.1715	Z =	1896.1710 in <sup>3</sup>			Z =	1896.1710 in <sup>3</sup>





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Date 3/23/2012  
 Date 4/2/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	30.1200	8.0000	240.9600	0.6275	0.0000	0.0000	0.6275	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>79.87</b>		<b>638.96</b>	<b>738.03</b>		<b>196.28</b>	<b>934.31</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	116.79	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	116.79	in <sup>3</sup>
I <sub>y</sub> =	934.31	in <sup>4</sup>	S <sub>left</sub> =	116.79	in <sup>3</sup>	I <sub>y</sub> =	934.31	in <sup>4</sup>	S <sub>left</sub> =	116.79	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	79.8700	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	79.8700	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.4202	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.4202	in

Non-composite Capacities*		
	AB	AI
M	5214.47 k-ft	5214.47 k-ft
V	576.50 k	576.50 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



Made By CTG  
Checked By DMP

Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 60.2400$  in

$d_o = 65.1900$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



**Girder 31-32 Section 1**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	60.3650	543.2850	0.4219	29.7450	7962.8852	7963.3071
	Vertical Leg	7.8750	57.3650	451.7494	18.0879	26.7450	5632.9483	5651.0362
2	Horizontal Leg	9.0000	0.8750	7.8750	0.4219	29.7450	7962.8852	7963.3071
	Vertical Leg	7.8750	3.8750	30.5156	18.0879	26.7450	5632.9483	5651.0362
3	Web Plate	30.1200	30.6200	922.2744	9108.4326	0.0000	0.0000	9108.4326
4	Cover Plate Top	8.0000	60.9900	487.9200	0.1667	30.3700	7378.6952	7378.8619
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	30.3700	7378.6952	7378.8619
<b>Total</b>		<b>79.87</b>		<b>2445.62</b>	<b>9145.79</b>		<b>41949.06</b>	<b>51094.84</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	30.6200	in	S <sub>top</sub> = 1668.68 in <sup>3</sup>	y-bar =	30.6200	in	S <sub>top</sub> = 1668.68 in <sup>3</sup>
I <sub>x</sub> =	51094.84	n <sup>4</sup>	S <sub>bottom</sub> = 1668.68 in <sup>3</sup>	I <sub>x</sub> =	51094.84	in <sup>4</sup>	S <sub>bottom</sub> = 1668.68 in <sup>3</sup>
C <sub>top</sub> =	30.6200	in	A = 79.8700 in <sup>2</sup>	C <sub>top</sub> =	30.6200	in	A = 79.8700 in <sup>2</sup>
C <sub>bottom</sub> =	30.6200	in	r <sub>x</sub> = 25.2928 in	C <sub>bottom</sub> =	30.6200	in	r <sub>x</sub> = 25.2928 in
J =	10.1715		Z = 1896.1710 in <sup>3</sup>				Z = 1896.1710 in <sup>3</sup>



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	30.1200	8.0000	240.9600	0.6275	0.0000	0.0000	0.6275	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>79.87</b>		<b>638.96</b>	<b>738.03</b>		<b>196.28</b>	<b>934.31</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	116.79	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	116.79	in <sup>3</sup>
I <sub>y</sub> =	934.31	in <sup>4</sup>	S <sub>left</sub> =	116.79	in <sup>3</sup>	I <sub>y</sub> =	934.31	in <sup>4</sup>	S <sub>left</sub> =	116.79	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	79.8700	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	79.8700	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.4202	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.4202	in

Non-composite Capacities*		
	AB	AI
M	5214.47 k-ft	5214.47 k-ft
V	576.50 k	576.50 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 53.4000$  in

$d_o = 58.5000$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



Girder 31-32 Section 2

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	53.5250	481.7250	0.4219	26.3250	6237.0506	6237.4725
	Vertical Leg	7.8750	50.5250	397.8844	18.0879	23.3250	4284.4380	4302.5259
2	Horizontal Leg	9.0000	0.8750	7.8750	0.4219	26.3250	6237.0506	6237.4725
	Vertical Leg	7.8750	3.8750	30.5156	18.0879	23.3250	4284.4380	4302.5259
3	Web Plate	26.7000	27.2000	726.2400	6344.7210	0.0000	0.0000	6344.7210
4	Cover Plate Top	8.0000	54.1500	433.2000	0.1667	26.9500	5810.4200	5810.5867
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	26.9500	5810.4200	5810.5867
<b>Total</b>		<b>76.45</b>		<b>2079.44</b>	<b>6382.07</b>		<b>32663.82</b>	<b>39045.89</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	27.2000	in	S <sub>top</sub> =	1435.51	in <sup>3</sup>	y-bar =	27.2000	in	S <sub>top</sub> =	1435.51	in <sup>3</sup>
I <sub>x</sub> =	39045.89	n <sup>4</sup>	S <sub>bott.</sub> =	1435.51	in <sup>3</sup>	I <sub>x</sub> =	39045.89	in <sup>4</sup>	S <sub>bott.</sub> =	1435.51	in <sup>3</sup>
C <sub>top</sub> =	27.2000	in	A =	76.4500	in <sup>2</sup>	C <sub>top</sub> =	27.2000	in	A =	76.4500	in <sup>2</sup>
C <sub>bottom</sub> =	27.2000	in	r <sub>x</sub> =	22.5995	in	C <sub>bottom</sub> =	27.2000	in	r <sub>x</sub> =	22.5995	in
J =	9.8865		Z =	1628.8638	in <sup>3</sup>	Z =	1628.8638	in <sup>3</sup>			



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Date 3/23/2012  
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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	26.7000	8.0000	213.6000	0.5563	0.0000	0.0000	0.5563	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>76.45</b>		<b>611.60</b>	<b>737.96</b>		<b>196.28</b>	<b>934.24</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	116.78	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	116.78	in <sup>3</sup>
I <sub>y</sub> =	934.24	in <sup>4</sup>	S <sub>left</sub> =	116.78	in <sup>3</sup>	I <sub>y</sub> =	934.24	in <sup>4</sup>	S <sub>left</sub> =	116.78	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	76.4500	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	76.4500	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.4957	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.4957	in

Non-composite Capacities*		
	AB	AI
M	4479.38 k-ft	4479.38 k-ft
V	511.04 k	511.04 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
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AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 50.0400$  in

$d_o = 54.0000$  in

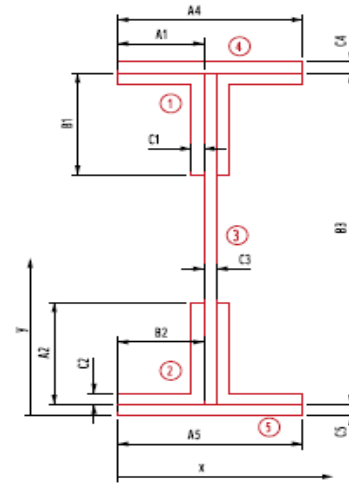
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



Girder 31-32 Section 3

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg		9.0000	50.1650	451.4850	0.4219	24.6450	5466.3842	5466.8061
	Vertical Leg		7.8750	47.1650	371.4244	18.0879	21.6450	3689.4849	3707.5728
2	Horizontal Leg		9.0000	0.8750	7.8750	0.4219	24.6450	5466.3842	5466.8061
	Vertical Leg		7.8750	3.8750	30.5156	18.0879	21.6450	3689.4849	3707.5728
3	Web Plate		25.0200	25.5200	638.5104	5220.8433	0.0000	0.0000	5220.8433
4	Cover Plate Top		8.0000	50.7900	406.3200	0.1667	25.2700	5108.5832	5108.7499
	Cover Plate Bottom		8.0000	0.2500	2.0000	0.1667	25.2700	5108.5832	5108.7499
<b>Total</b>			<b>74.77</b>		<b>1908.13</b>	<b>5258.20</b>		<b>28528.90</b>	<b>33787.10</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	25.5200 in	$S_{top} =$	1323.95 in <sup>3</sup>	y-bar =	25.5200 in	$S_{top} =$	1323.95 in <sup>3</sup>
$I_x =$	33787.10 in <sup>4</sup>	$S_{bott.} =$	1323.95 in <sup>3</sup>	$I_x =$	33787.10 in <sup>4</sup>	$S_{bott.} =$	1323.95 in <sup>3</sup>
$C_{top} =$	25.5200 in	A =	74.7700 in <sup>2</sup>	$C_{top} =$	25.5200 in	A =	74.7700 in <sup>2</sup>
$C_{bottom} =$	25.5200 in	$r_x =$	21.2575 in	$C_{bottom} =$	25.5200 in	$r_x =$	21.2575 in
J =	9.7465	Z =	1501.8390 in <sup>3</sup>	Z =	1501.8390 in <sup>3</sup>		



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Date 3/23/2012  
 Date 4/2/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	25.0200	8.0000	200.1600	0.5213	0.0000	0.0000	0.5213	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>74.77</b>		<b>598.16</b>	<b>737.93</b>		<b>196.28</b>	<b>934.20</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	116.78	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	116.78	in <sup>3</sup>
I <sub>y</sub> =	934.20	in <sup>4</sup>	S <sub>left</sub> =	116.78	in <sup>3</sup>	I <sub>y</sub> =	934.20	in <sup>4</sup>	S <sub>left</sub> =	116.78	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	74.7700	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	74.7700	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5347	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5347	in

Non-composite Capacities*		
	AB	AI
M	4130.06 k-ft	4130.06 k-ft
V	478.88 k	478.88 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 54.9600$  in

$d_o = 57.0000$  in

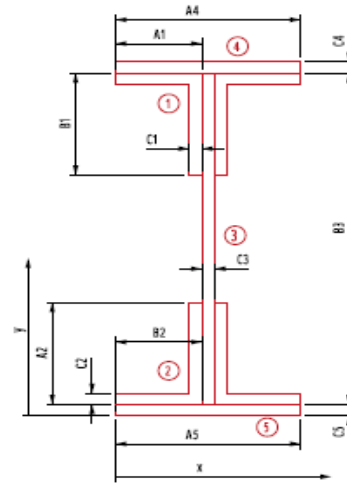
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



**Girder 31-32 Section 4**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg		9.0000	55.0850	495.7650	0.4219	27.1050	6612.1292	6612.5511
	Vertical Leg		7.8750	52.0850	410.1694	18.0879	24.1050	4575.7768	4593.8647
2	Horizontal Leg		9.0000	0.8750	7.8750	0.4219	27.1050	6612.1292	6612.5511
	Vertical Leg		7.8750	3.8750	30.5156	18.0879	24.1050	4575.7768	4593.8647
3	Web Plate		27.4800	27.9800	768.8904	6917.1777	0.0000	0.0000	6917.1777
4	Cover Plate Top		8.0000	55.7100	445.6800	0.1667	27.7300	6151.6232	6151.7899
	Cover Plate Bottom		8.0000	0.2500	2.0000	0.1667	27.7300	6151.6232	6151.7899
<b>Total</b>			<b>77.23</b>		<b>2160.90</b>	<b>6954.53</b>		<b>34679.06</b>	<b>41633.59</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	27.9800 in	S <sub>top</sub> =	1487.98 in <sup>3</sup>	y-bar =	27.9800 in	S <sub>top</sub> =	1487.98 in <sup>3</sup>
I <sub>x</sub> =	41633.59 in <sup>4</sup>	S <sub>bott.</sub> =	1487.98 in <sup>3</sup>	I <sub>x</sub> =	41633.59 in <sup>4</sup>	S <sub>bott.</sub> =	1487.98 in <sup>3</sup>
C <sub>top</sub> =	27.9800 in	A =	77.2300 in <sup>2</sup>	C <sub>top</sub> =	27.9800 in	A =	77.2300 in <sup>2</sup>
C <sub>bottom</sub> =	27.9800 in	r <sub>x</sub> =	23.2182 in	C <sub>bottom</sub> =	27.9800 in	r <sub>x</sub> =	23.2182 in
J =	9.9515	Z =	1688.7990 in <sup>3</sup>	Z =	1688.7990 in <sup>3</sup>		





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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	27.4800	8.0000	219.8400	0.5725	0.0000	0.0000	0.5725	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>77.23</b>		<b>617.84</b>	<b>737.98</b>		<b>196.28</b>	<b>934.25</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	116.78	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	116.78	in <sup>3</sup>
I <sub>y</sub> =	934.25	in <sup>4</sup>	S <sub>left</sub> =	116.78	in <sup>3</sup>	I <sub>y</sub> =	934.25	in <sup>4</sup>	S <sub>left</sub> =	116.78	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	77.2300	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	77.2300	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.4781	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.4781	in

Non-composite Capacities*		
	AB	AI
M	4644.20 k-ft	4644.20 k-ft
V	525.97 k	525.97 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 64.2000$  in

$d_o = 54.0000$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.5000$  in  
 $A_5 = 16.0000$  in



**Girder 31-32 Section 5**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	64.3250	578.9250	0.4219	31.7250	9058.2806	9058.7025
	Vertical Leg	7.8750	61.3250	482.9344	18.0879	28.7250	6497.8643	6515.9522
2	Horizontal Leg	9.0000	0.8750	7.8750	0.4219	31.7250	9058.2806	9058.7025
	Vertical Leg	7.8750	3.8750	30.5156	18.0879	28.7250	6497.8643	6515.9522
3	Web Plate	32.1000	32.6000	1046.4600	11025.3870	0.0000	0.0000	11025.3870
4	Cover Plate Top	8.0000	64.9500	519.6000	0.1667	32.3500	8372.1800	8372.3467
	Cover Plate Bottom	8.0000	0.2500	2.0000	0.1667	32.3500	8372.1800	8372.3467
<b>Total</b>		<b>81.85</b>		<b>2668.31</b>	<b>11062.74</b>		<b>47856.65</b>	<b>58919.39</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	32.6000 in	$S_{top} =$	1807.34 in <sup>3</sup>	y-bar =	32.6000 in	$S_{top} =$	1807.34 in <sup>3</sup>
$I_x =$	58919.39 in <sup>4</sup>	$S_{bott.} =$	1807.34 in <sup>3</sup>	$I_x =$	58919.39 in <sup>4</sup>	$S_{bott.} =$	1807.34 in <sup>3</sup>
$C_{top} =$	32.6000 in	A =	81.8500 in <sup>2</sup>	$C_{top} =$	32.6000 in	A =	81.8500 in <sup>2</sup>
$C_{bottom} =$	32.6000 in	$r_x =$	26.8299 in	$C_{bottom} =$	32.6000 in	$r_x =$	26.8299 in
J =	10.3365	Z =	2056.2738 in <sup>3</sup>			Z =	2056.2738 in <sup>3</sup>



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Date 3/23/2012  
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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	32.1000	8.0000	256.8000	0.6688	0.0000	0.0000	0.6688	
4	Top Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
4	Bottom Cover Plate	8.0000	8.0000	64.0000	341.3333	0.0000	0.0000	341.3333	
<b>Total</b>		<b>81.85</b>		<b>654.80</b>	<b>738.07</b>		<b>196.28</b>	<b>934.35</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	116.79	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	116.79	in <sup>3</sup>
I <sub>y</sub> =	934.35	in <sup>4</sup>	S <sub>left</sub> =	116.79	in <sup>3</sup>	I <sub>y</sub> =	934.35	in <sup>4</sup>	S <sub>left</sub> =	116.79	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	81.8500	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	81.8500	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.3787	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.3787	in

Non-composite Capacities*		
	AB	AI
M	5654.75 k-ft	5654.75 k-ft
V	614.39 k	614.39 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
------------------	-----------

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

**Top Angles:**

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

**Bottom Angles:**

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

**Web Plate:**

$C_3 = 0.5000$  in  
 $*B_3 = 68.4000$  in

$d_o = 66.9400$  in

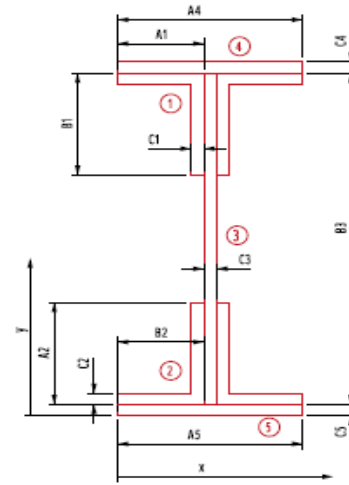
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

**Top Cover Plate:**

$C_4 = 0.6250$  in  
 $A_4 = 16.0000$  in

**Btm Cover Plate:**

$C_5 = 0.6250$  in  
 $A_5 = 16.0000$  in



**Girder 32-33 Section 1**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	68.6500	617.8500	0.4219	33.8250	10297.1756	10297.5975
	Vertical Leg	7.8750	65.6500	516.9938	18.0879	30.8250	7482.6724	7500.7603
2	Horizontal Leg	9.0000	1.0000	9.0000	0.4219	33.8250	10297.1756	10297.5975
	Vertical Leg	7.8750	4.0000	31.5000	18.0879	30.8250	7482.6724	7500.7603
3	Web Plate	34.2000	34.8250	1191.0150	13333.8960	0.0000	0.0000	13333.8960
4	Cover Plate Top	10.0000	69.3375	693.3750	0.3255	34.5125	11911.1266	11911.4521
	Cover Plate Bottom	10.0000	0.3125	3.1250	0.3255	34.5125	11911.1266	11911.4521
<b>Total</b>		<b>87.95</b>		<b>3062.86</b>	<b>13371.57</b>		<b>59381.95</b>	<b>72753.52</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	34.8250 in	$S_{top} =$	2089.12 in <sup>3</sup>	y-bar =	34.8250 in	$S_{top} =$	2089.12 in <sup>3</sup>
$I_x =$	72753.52 in <sup>4</sup>	$S_{bott.} =$	2089.12 in <sup>3</sup>	$I_x =$	72753.52 in <sup>4</sup>	$S_{bott.} =$	2089.12 in <sup>3</sup>
$C_{top} =$	34.8250 in	A =	87.9500 in <sup>2</sup>	$C_{top} =$	34.8250 in	A =	87.9500 in <sup>2</sup>
$C_{bottom} =$	34.8250 in	$r_x =$	28.7613 in	$C_{bottom} =$	34.8250 in	$r_x =$	28.7613 in
J =	11.7823	Z =	2369.4138 in <sup>3</sup>	Z =	2369.4138		in <sup>3</sup>



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	34.2000	8.0000	273.6000	0.7125	0.0000	0.0000	0.7125	
4	Top Cover Plate	10.0000	8.0000	80.0000	426.6667	0.0000	0.0000	426.6667	
4	Bottom Cover Plate	10.0000	8.0000	80.0000	426.6667	0.0000	0.0000	426.6667	
<b>Total</b>		<b>87.95</b>		<b>703.60</b>	<b>908.78</b>		<b>196.28</b>	<b>1105.06</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	138.13	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	138.13	in <sup>3</sup>
I <sub>y</sub> =	1105.06	in <sup>4</sup>	S <sub>left</sub> =	138.13	in <sup>3</sup>	I <sub>y</sub> =	1105.06	in <sup>4</sup>	S <sub>left</sub> =	138.13	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	87.9500	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	87.9500	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5447	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5447	in

Non-composite Capacities*		
	AB	AI
M	5745.07 k-ft	5745.07 k-ft
V	612.76 k	612.76 k

\*Noncompact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 63.4800$  in

$d_o = 60.0000$  in

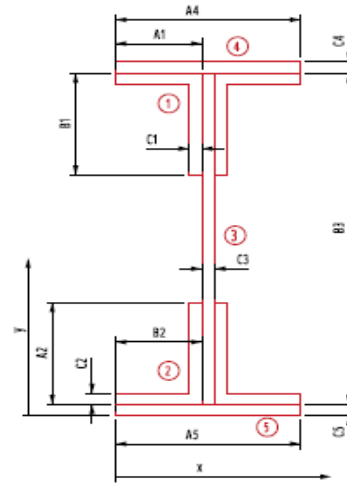
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.6250$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.6250$  in  
 $A_5 = 16.0000$  in



Girder 32-33 Section 2

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	63.7300	573.5700	0.4219	31.3650	8853.8690	8854.2909
	Vertical Leg	7.8750	60.7300	478.2488	18.0879	28.3650	6336.0141	6354.1020
2	Horizontal Leg	9.0000	1.0000	9.0000	0.4219	31.3650	8853.8690	8854.2909
	Vertical Leg	7.8750	4.0000	31.5000	18.0879	28.3650	6336.0141	6354.1020
3	Web Plate	31.7400	32.3650	1027.2651	10658.5840	0.0000	0.0000	10658.5840
4	Cover Plate Top	10.0000	64.4175	644.1750	0.3255	32.0525	10273.6276	10273.9531
	Cover Plate Bottom	10.0000	0.3125	3.1250	0.3255	32.0525	10273.6276	10273.9531
<b>Total</b>		<b>85.49</b>		<b>2766.88</b>	<b>10696.25</b>		<b>50927.02</b>	<b>61623.28</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	32.3650 in	S <sub>top</sub> =	1904.01 in <sup>3</sup>	y-bar =	32.3650 in	S <sub>top</sub> =	1904.01 in <sup>3</sup>
I <sub>x</sub> =	61623.28 in <sup>4</sup>	S <sub>bott.</sub> =	1904.01 in <sup>3</sup>	I <sub>x</sub> =	61623.28 in <sup>4</sup>	S <sub>bott.</sub> =	1904.01 in <sup>3</sup>
C <sub>top</sub> =	32.3650 in	A =	85.4900 in <sup>2</sup>	C <sub>top</sub> =	32.3650 in	A =	85.4900 in <sup>2</sup>
C <sub>bottom</sub> =	32.3650 in	r <sub>x</sub> =	26.8482 in	C <sub>bottom</sub> =	32.3650 in	r <sub>x</sub> =	26.8482 in
J =	11.5773	Z =	2156.0826 in <sup>3</sup>	Z =	2156.0826 in <sup>3</sup>		



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	31.7400	8.0000	253.9200	0.6613	0.0000	0.0000	0.6613	
4	Top Cover Plate	10.0000	8.0000	80.0000	426.6667	0.0000	0.0000	426.6667	
4	Bottom Cover Plate	10.0000	8.0000	80.0000	426.6667	0.0000	0.0000	426.6667	
<b>Total</b>		<b>85.49</b>		<b>683.92</b>	<b>908.73</b>		<b>196.28</b>	<b>1105.01</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	138.13	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	138.13	in <sup>3</sup>
I <sub>y</sub> =	1105.01	in <sup>4</sup>	S <sub>left</sub> =	138.13	in <sup>3</sup>	I <sub>y</sub> =	1105.01	in <sup>4</sup>	S <sub>left</sub> =	138.13	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	85.4900	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	85.4900	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5952	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5952	in

Non-composite Capacities*		
	AB	AI
M	5929.23 k-ft	5929.23 k-ft
V	607.50 k	607.50 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 58.5600$  in

$d_o = 60.0000$  in

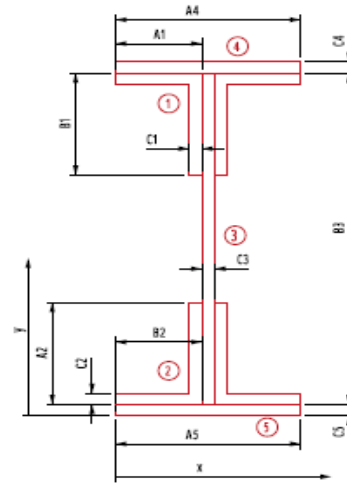
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.6250$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.6250$  in  
 $A_5 = 16.0000$  in



**Girder 32-33 Section 3**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	58.8100	529.2900	0.4219	28.9050	7519.4912	7519.9131
	Vertical Leg	7.8750	55.8100	439.5038	18.0879	25.9050	5284.6686	5302.7565
2	Horizontal Leg	9.0000	1.0000	9.0000	0.4219	28.9050	7519.4912	7519.9131
	Vertical Leg	7.8750	4.0000	31.5000	18.0879	25.9050	5284.6686	5302.7565
3	Web Plate	29.2800	29.9050	875.6184	8367.4276	0.0000	0.0000	8367.4276
4	Cover Plate Top	10.0000	59.4975	594.9750	0.3255	29.5925	8757.1606	8757.4861
	Cover Plate Bottom	10.0000	0.3125	3.1250	0.3255	29.5925	8757.1606	8757.4861
<b>Total</b>		<b>83.03</b>		<b>2483.01</b>	<b>8405.10</b>		<b>43122.64</b>	<b>51527.74</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	29.9050 in	S <sub>top</sub> =	1723.05 in <sup>3</sup>	y-bar =	29.9050 in	S <sub>top</sub> =	1723.05 in <sup>3</sup>
I <sub>x</sub> =	51527.74 in <sup>4</sup>	S <sub>bottom</sub> =	1723.05 in <sup>3</sup>	I <sub>x</sub> =	51527.74 in <sup>4</sup>	S <sub>bottom</sub> =	1723.05 in <sup>3</sup>
C <sub>top</sub> =	29.9050 in	A =	83.0300 in <sup>2</sup>	C <sub>top</sub> =	29.9050 in	A =	83.0300 in <sup>2</sup>
C <sub>bottom</sub> =	29.9050 in	r <sub>x</sub> =	24.9117 in	C <sub>bottom</sub> =	29.9050 in	r <sub>x</sub> =	24.9117 in
J =	11.3723	Z =	1948.8030 in <sup>3</sup>	Z =	1948.8030		in <sup>3</sup>





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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	29.2800	8.0000	234.2400	0.6100	0.0000	0.0000	0.6100	
4	Top Cover Plate	10.0000	8.0000	80.0000	426.6667	0.0000	0.0000	426.6667	
4	Bottom Cover Plate	10.0000	8.0000	80.0000	426.6667	0.0000	0.0000	426.6667	
<b>Total</b>		<b>83.03</b>		<b>664.24</b>	<b>908.68</b>		<b>196.28</b>	<b>1104.96</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	138.12	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	138.12	in <sup>3</sup>
I <sub>y</sub> =	1104.96	in <sup>4</sup>	S <sub>left</sub> =	138.12	in <sup>3</sup>	I <sub>y</sub> =	1104.96	in <sup>4</sup>	S <sub>left</sub> =	138.12	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	83.0300	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	83.0300	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.6480	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.6480	in

Non-composite Capacities*		
	AB	AI
M	5359.21 k-ft	5359.21 k-ft
V	560.42 k	560.42 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 55.3200$  in

$d_o = 54.0000$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.6250$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.6250$  in  
 $A_5 = 16.0000$  in



**Girder 32-33 Section 4**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg		9.0000	55.5700	500.1300	0.4219	27.2850	6700.2410	6700.6629
	Vertical Leg		7.8750	52.5700	413.9888	18.0879	24.2850	4644.3696	4662.4575
2	Horizontal Leg		9.0000	1.0000	9.0000	0.4219	27.2850	6700.2410	6700.6629
	Vertical Leg		7.8750	4.0000	31.5000	18.0879	24.2850	4644.3696	4662.4575
3	Web Plate		27.6600	28.2850	782.3631	7053.9970	0.0000	0.0000	7053.9970
4	Cover Plate Top		10.0000	56.2575	562.5750	0.3255	27.9725	7824.6076	7824.9331
	Cover Plate Bottom		10.0000	0.3125	3.1250	0.3255	27.9725	7824.6076	7824.9331
<b>Total</b>			<b>81.41</b>		<b>2302.68</b>	<b>7091.67</b>		<b>38338.44</b>	<b>45430.10</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	28.2850	in	$S_{top} = 1606.16$ in <sup>3</sup>	y-bar =	28.2850	in	$S_{top} = 1606.16$ in <sup>3</sup>
$I_x =$	45430.10	n <sup>4</sup>	$S_{bott.} = 1606.16$ in <sup>3</sup>	$I_x =$	45430.10	in <sup>4</sup>	$S_{bott.} = 1606.16$ in <sup>3</sup>
$C_{top} =$	28.2850	in	A = 81.4100 in <sup>2</sup>	$C_{top} =$	28.2850	in	A = 81.4100 in <sup>2</sup>
$C_{bottom} =$	28.2850	in	$r_x = 23.6229$ in	$C_{bottom} =$	28.2850	in	$r_x = 23.6229$ in
J =	11.2373		Z = 1815.6066 in <sup>3</sup>				Z = 1815.6066 in <sup>3</sup>



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Date 3/23/2012  
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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	27.6600	8.0000	221.2800	0.5763	0.0000	0.0000	0.5763	
4	Top Cover Plate	10.0000	8.0000	80.0000	426.6667	0.0000	0.0000	426.6667	
4	Bottom Cover Plate	10.0000	8.0000	80.0000	426.6667	0.0000	0.0000	426.6667	
<b>Total</b>		<b>81.41</b>		<b>651.28</b>	<b>908.65</b>		<b>196.28</b>	<b>1104.93</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	138.12	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	138.12	in <sup>3</sup>
I <sub>y</sub> =	1104.93	in <sup>4</sup>	S <sub>left</sub> =	138.12	in <sup>3</sup>	I <sub>y</sub> =	1104.93	in <sup>4</sup>	S <sub>left</sub> =	138.12	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	81.4100	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	81.4100	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.6841	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.6841	in

Non-composite Capacities*		
	AB	AI
M	4992.92 k-ft	4992.92 k-ft
V	529.41 k	529.41 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 58.5600$  in

$d_o = 60.0000$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.6250$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.6250$  in  
 $A_5 = 16.0000$  in



**Girder 32-33 Section 5**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	58.8100	529.2900	0.4219	28.9050	7519.4912	7519.9131
	Vertical Leg	7.8750	55.8100	439.5038	18.0879	25.9050	5284.6686	5302.7565
2	Horizontal Leg	9.0000	1.0000	9.0000	0.4219	28.9050	7519.4912	7519.9131
	Vertical Leg	7.8750	4.0000	31.5000	18.0879	25.9050	5284.6686	5302.7565
3	Web Plate	29.2800	29.9050	875.6184	8367.4276	0.0000	0.0000	8367.4276
4	Cover Plate Top	10.0000	59.4975	594.9750	0.3255	29.5925	8757.1606	8757.4861
	Cover Plate Bottom	10.0000	0.3125	3.1250	0.3255	29.5925	8757.1606	8757.4861
<b>Total</b>		<b>83.03</b>		<b>2483.01</b>	<b>8405.10</b>		<b>43122.64</b>	<b>51527.74</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	29.9050	in	$S_{top} = 1723.05$	in <sup>3</sup>	y-bar =	29.9050	in	$S_{top} = 1723.05$	in <sup>3</sup>		
$I_x =$	51527.74	n <sup>4</sup>	$S_{bott.} = 1723.05$	in <sup>3</sup>	$I_x =$	51527.74	in <sup>4</sup>	$S_{bott.} = 1723.05$	in <sup>3</sup>		
$C_{top} =$	29.9050	in	A =	83.0300	in <sup>2</sup>	$C_{top} =$	29.9050	in	A =	83.0300	in <sup>2</sup>
$C_{bottom} =$	29.9050	in	$r_x =$	24.9117	in	$C_{bottom} =$	29.9050	in	$r_x =$	24.9117	in
J =	11.3723		Z =	1948.8030	in <sup>3</sup>	Z =	1948.8030	in <sup>3</sup>			



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	29.2800	8.0000	234.2400	0.6100	0.0000	0.0000	0.6100	
4	Top Cover Plate	10.0000	8.0000	80.0000	426.6667	0.0000	0.0000	426.6667	
4	Bottom Cover Plate	10.0000	8.0000	80.0000	426.6667	0.0000	0.0000	426.6667	
<b>Total</b>		<b>83.03</b>		<b>664.24</b>	<b>908.68</b>		<b>196.28</b>	<b>1104.96</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	138.12	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	138.12	in <sup>3</sup>
I <sub>y</sub> =	1104.96	in <sup>4</sup>	S <sub>left</sub> =	138.12	in <sup>3</sup>	I <sub>y</sub> =	1104.96	in <sup>4</sup>	S <sub>left</sub> =	138.12	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	83.0300	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	83.0300	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.6480	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.6480	in

Non-composite Capacities*		
	AB	AI
M	5359.21 k-ft	5359.21 k-ft
V	560.42 k	560.42 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 63.4800$  in

$d_o = 59.6250$  in

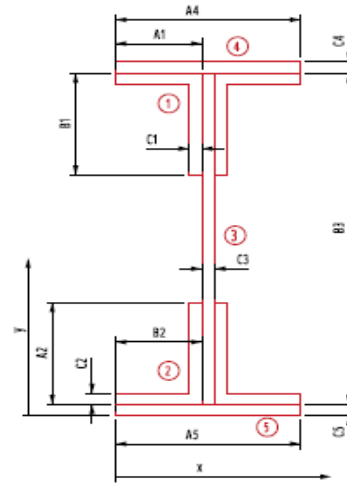
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.6250$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.6250$  in  
 $A_5 = 16.0000$  in



**Girder 32-33 Section 6**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	63.7300	573.5700	0.4219	31.3650	8853.8690	8854.2909
	Vertical Leg	7.8750	60.7300	478.2488	18.0879	28.3650	6336.0141	6354.1020
2	Horizontal Leg	9.0000	1.0000	9.0000	0.4219	31.3650	8853.8690	8854.2909
	Vertical Leg	7.8750	4.0000	31.5000	18.0879	28.3650	6336.0141	6354.1020
3	Web Plate	31.7400	32.3650	1027.2651	10658.5840	0.0000	0.0000	10658.5840
4	Cover Plate Top	10.0000	64.4175	644.1750	0.3255	32.0525	10273.6276	10273.9531
	Cover Plate Bottom	10.0000	0.3125	3.1250	0.3255	32.0525	10273.6276	10273.9531
<b>Total</b>		<b>85.49</b>		<b>2766.88</b>	<b>10696.25</b>		<b>50927.02</b>	<b>61623.28</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	32.3650 in	$S_{top} =$	1904.01 in <sup>3</sup>	y-bar =	32.3650 in	$S_{top} =$	1904.01 in <sup>3</sup>
$I_x =$	61623.28 in <sup>4</sup>	$S_{bott.} =$	1904.01 in <sup>3</sup>	$I_x =$	61623.28 in <sup>4</sup>	$S_{bott.} =$	1904.01 in <sup>3</sup>
$C_{top} =$	32.3650 in	A =	85.4900 in <sup>2</sup>	$C_{top} =$	32.3650 in	A =	85.4900 in <sup>2</sup>
$C_{bottom} =$	32.3650 in	$r_x =$	26.8482 in	$C_{bottom} =$	32.3650 in	$r_x =$	26.8482 in
J =	11.5773	Z =	2156.0826 in <sup>3</sup>	Z =	2156.0826 in <sup>3</sup>		



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	31.7400	8.0000	253.9200	0.6613	0.0000	0.0000	0.6613	
4	Top Cover Plate	10.0000	8.0000	80.0000	426.6667	0.0000	0.0000	426.6667	
4	Bottom Cover Plate	10.0000	8.0000	80.0000	426.6667	0.0000	0.0000	426.6667	
<b>Total</b>		<b>85.49</b>		<b>683.92</b>	<b>908.73</b>		<b>196.28</b>	<b>1105.01</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	138.13	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	138.13	in <sup>3</sup>
I <sub>y</sub> =	1105.01	in <sup>4</sup>	S <sub>left</sub> =	138.13	in <sup>3</sup>	I <sub>y</sub> =	1105.01	in <sup>4</sup>	S <sub>left</sub> =	138.13	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	85.4900	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	85.4900	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5952	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5952	in

Non-composite Capacities*		
	AB	AI
M	5929.23 k-ft	5929.23 k-ft
V	607.50 k	607.50 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 68.4000$  in

$d_o = 63.0600$  in

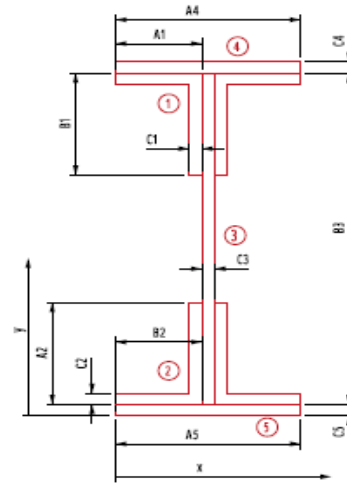
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.6250$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.6250$  in  
 $A_5 = 16.0000$  in



Girder 32-33 Section 7

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	68.6500	617.8500	0.4219	33.8250	10297.1756	10297.5975
	Vertical Leg	7.8750	65.6500	516.9938	18.0879	30.8250	7482.6724	7500.7603
2	Horizontal Leg	9.0000	1.0000	9.0000	0.4219	33.8250	10297.1756	10297.5975
	Vertical Leg	7.8750	4.0000	31.5000	18.0879	30.8250	7482.6724	7500.7603
3	Web Plate	34.2000	34.8250	1191.0150	13333.8960	0.0000	0.0000	13333.8960
4	Cover Plate Top	10.0000	69.3375	693.3750	0.3255	34.5125	11911.1266	11911.4521
	Cover Plate Bottom	10.0000	0.3125	3.1250	0.3255	34.5125	11911.1266	11911.4521
<b>Total</b>		<b>87.95</b>		<b>3062.86</b>	<b>13371.57</b>		<b>59381.95</b>	<b>72753.52</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	34.8250 in	$S_{top} =$	2089.12 in <sup>3</sup>	y-bar =	34.8250 in	$S_{top} =$	2089.12 in <sup>3</sup>
$I_x =$	72753.52 in <sup>4</sup>	$S_{bott.} =$	2089.12 in <sup>3</sup>	$I_x =$	72753.52 in <sup>4</sup>	$S_{bott.} =$	2089.12 in <sup>3</sup>
$C_{top} =$	34.8250 in	A =	87.9500 in <sup>2</sup>	$C_{top} =$	34.8250 in	A =	87.9500 in <sup>2</sup>
$C_{bottom} =$	34.8250 in	$r_x =$	28.7613 in	$C_{bottom} =$	34.8250 in	$r_x =$	28.7613 in
J =	11.7823	Z =	2369.4138 in <sup>3</sup>	Z =	2369.4138		in <sup>3</sup>





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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	34.2000	8.0000	273.6000	0.7125	0.0000	0.0000	0.7125	
4	Top Cover Plate	10.0000	8.0000	80.0000	426.6667	0.0000	0.0000	426.6667	
4	Bottom Cover Plate	10.0000	8.0000	80.0000	426.6667	0.0000	0.0000	426.6667	
<b>Total</b>		<b>87.95</b>		<b>703.60</b>	<b>908.78</b>		<b>196.28</b>	<b>1105.06</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	138.13	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	138.13	in <sup>3</sup>
I <sub>y</sub> =	1105.06	in <sup>4</sup>	S <sub>left</sub> =	138.13	in <sup>3</sup>	I <sub>y</sub> =	1105.06	in <sup>4</sup>	S <sub>left</sub> =	138.13	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	87.9500	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	87.9500	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5447	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5447	in

Non-composite Capacities*		
	AB	AI
M	5745.07 k-ft	5745.07 k-ft
V	632.30 k	632.30 k

\*Noncompact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 69.1200$  in

$d_o = 61.6200$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 1.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.7500$  in  
 $A_5 = 16.0000$  in



**Girder 33-34 Section 1**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	69.4950	625.4550	0.4219	30.0797	8143.1151	8143.5370
	Vertical Leg	7.8750	66.4950	523.6481	18.0879	27.0797	5774.8332	5792.9211
2	Horizontal Leg	9.0000	1.1250	10.1250	0.4219	38.2903	13195.2983	13195.7201
	Vertical Leg	7.8750	4.1250	32.4844	18.0879	35.2903	9807.5461	9825.6339
3	Web Plate	34.5600	35.3100	1220.3136	13759.4143	4.1053	582.4461	14341.8604
4	Cover Plate Top	24.0000	70.6200	1694.8800	4.5000	31.2047	23369.6544	23374.1544
	Cover Plate Bottom	12.0000	0.3750	4.5000	0.5625	39.0403	18289.7058	18290.2683
<b>Total</b>		<b>104.31</b>		<b>4111.41</b>	<b>13801.50</b>		<b>79162.60</b>	<b>92964.10</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	39.4153 in	$S_{top} =$	2909.24 in <sup>3</sup>	y-bar =	39.4153 in	$S_{top} =$	2909.24 in <sup>3</sup>
$I_x =$	92964.10 in <sup>4</sup>	$S_{bott.} =$	2358.58 in <sup>3</sup>	$I_x =$	92964.10 in <sup>4</sup>	$S_{bott.} =$	2358.58 in <sup>3</sup>
$C_{top} =$	31.9547 in	A =	104.3100 in <sup>2</sup>	$C_{top} =$	31.9547 in	A =	104.3100 in <sup>2</sup>
$C_{bottom} =$	39.4153 in	$r_x =$	29.8535 in	$C_{bottom} =$	39.4153 in	$r_x =$	29.8535 in
J =	29.4581	Z =	2898.3506 in <sup>3</sup>	Z =	2898.3506 in <sup>3</sup>		



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Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

Y-Axis Section Properties:

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	34.5600	8.0000	276.4800	0.7200	0.0000	0.0000	0.7200	
4	Top Cover Plate	24.0000	8.0000	192.0000	1024.0000	0.0000	0.0000	1024.0000	
4	Bottom Cover Plate	12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000	
<b>Total</b>		<b>104.31</b>		<b>834.48</b>	<b>1591.46</b>		<b>196.28</b>	<b>1787.74</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	223.47	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	223.47	in <sup>3</sup>
I <sub>y</sub> =	1787.74	in <sup>4</sup>	S <sub>left</sub> =	223.47	in <sup>3</sup>	I <sub>y</sub> =	1787.74	in <sup>4</sup>	S <sub>left</sub> =	223.47	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	104.3100	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	104.3100	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.1399	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.1399	in

Non-composite Capacities*		
	AB	AI
M	6486.10 k-ft	6486.10 k-ft
V	642.63 k	642.63 k

\*Noncompact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 64.3200$  in

$d_o = 60.0000$  in

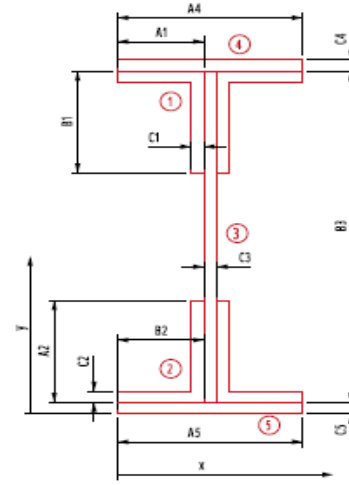
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 1.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.7500$  in  
 $A_5 = 16.0000$  in



**Girder 33-34 Section 2**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	64.6950	582.2550	0.4219	27.8657	6988.4548	6988.8766
	Vertical Leg	7.8750	61.6950	485.8481	18.0879	24.8657	4869.1205	4887.2084
2	Horizontal Leg	9.0000	1.1250	10.1250	0.4219	35.7043	11473.1994	11473.6213
	Vertical Leg	7.8750	4.1250	32.4844	18.0879	32.7043	8422.8944	8440.9823
3	Web Plate	32.1600	32.9100	1058.3856	11087.3272	3.9193	494.0172	11581.3444
4	Cover Plate Top	24.0000	65.8200	1579.6800	4.5000	28.9907	20171.0000	20175.5000
	Cover Plate Bottom	12.0000	0.3750	4.5000	0.5625	36.4543	15947.0274	15947.5899
<b>Total</b>		<b>101.91</b>		<b>3753.28</b>	<b>11129.41</b>		<b>68365.71</b>	<b>79495.12</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	36.8293	in	S <sub>top</sub> =	2672.94	in <sup>3</sup>	y-bar =	36.8293	in	S <sub>top</sub> =	2672.94	in <sup>3</sup>
I <sub>x</sub> =	79495.12	in <sup>4</sup>	S <sub>bottom</sub> =	2158.47	in <sup>3</sup>	I <sub>x</sub> =	79495.12	in <sup>4</sup>	S <sub>bottom</sub> =	2158.47	in <sup>3</sup>
C <sub>top</sub> =	29.7407	in	A =	101.9100	in <sup>2</sup>	C <sub>top</sub> =	29.7407	in	A =	101.9100	in <sup>2</sup>
C <sub>bottom</sub> =	36.8293	in	r <sub>x</sub> =	27.9294	in	C <sub>bottom</sub> =	36.8293	in	r <sub>x</sub> =	27.9294	in
J =	29.2581		Z =	2650.8866	in <sup>3</sup>	Z =	2650.8866	in <sup>3</sup>			



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Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg		4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg		3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
1 (Right)	Horizontal Leg		4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg		3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
2 (Left)	Horizontal Leg		4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313
	Vertical Leg		3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227
2 (Right)	Horizontal Leg		4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313
	Vertical Leg		3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227
3	Web Plate		32.1600	8.0000	257.2800	0.6700	0.0000	0.0000	0.6700
4	Top Cover Plate		24.0000	8.0000	192.0000	1024.0000	0.0000	0.0000	1024.0000
4	Bottom Cover Plate		12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000
<b>Total</b>			<b>101.91</b>		<b>815.28</b>	<b>1591.41</b>		<b>196.28</b>	<b>1787.69</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	8.0000	in	S <sub>right</sub> =	223.46	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	223.46	in <sup>3</sup>
I <sub>y</sub> =	1787.69	in <sup>4</sup>	S <sub>left</sub> =	223.46	in <sup>3</sup>	I <sub>y</sub> =	1787.69	in <sup>4</sup>	S <sub>left</sub> =	223.46	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	101.9100	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	101.9100	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.1883	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.1883	in

Non-composite Capacities*		
	AB	AI
M	7289.94 k-ft	7289.94 k-ft
V	615.54 k	615.54 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
------------------	-----------

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

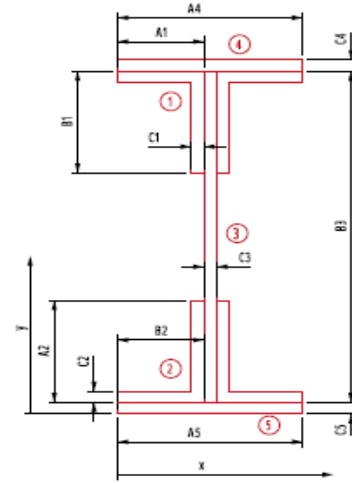
Top Angles:  $A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:  $B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:  $C_3 = 0.5000$  in  
 $*B_3 = 59.1600$  in  
 $d_o = 54.0000$  in  
 $d_o =$  stiffener spacing for shear check  
 Use "N/A" for no stiffeners

Top Cover Plate:  $C_4 = 1.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:  $C_5 = 1.5000$  in  
 $A_5 = 16.0000$  in



Girder 33-34 Section 3

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	60.2850	542.5650	0.4219	29.2050	7676.3882	7676.8101
	Vertical Leg	7.8750	57.2850	451.1194	18.0879	26.2050	5407.7784	5425.8663
2	Horizontal Leg	9.0000	1.8750	16.8750	0.4219	29.2050	7676.3882	7676.8101
	Vertical Leg	7.8750	4.8750	38.3906	18.0879	26.2050	5407.7784	5425.8663
3	Web Plate	29.5800	31.0800	919.3464	8627.2673	0.0000	0.0000	8627.2673
4	Cover Plate Top	24.0000	61.4100	1473.8400	4.5000	30.3300	22077.8136	22082.3136
	Cover Plate Bottom	24.0000	0.7500	18.0000	4.5000	30.3300	22077.8136	22082.3136
<b>Total</b>		<b>111.33</b>		<b>3460.14</b>	<b>8673.29</b>		<b>70323.96</b>	<b>78997.25</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	31.0800	in	S <sub>top</sub> = 2541.74 in <sup>3</sup>	y-bar =	31.0800	in	S <sub>top</sub> = 2541.74 in <sup>3</sup>
I <sub>x</sub> =	78997.25	n <sup>4</sup>	S <sub>bott.</sub> = 2541.74 in <sup>3</sup>	I <sub>x</sub> =	78997.25	in <sup>4</sup>	S <sub>bott.</sub> = 2541.74 in <sup>3</sup>
C <sub>top</sub> =	31.0800	in	A = 111.3300 in <sup>2</sup>	C <sub>top</sub> =	31.0800	in	A = 111.3300 in <sup>2</sup>
C <sub>bottom</sub> =	31.0800	in	r <sub>x</sub> = 26.6379 in	C <sub>bottom</sub> =	31.0800	in	r <sub>x</sub> = 26.6379 in
J =	44.7931		Z = 2831.7470 in <sup>3</sup>				Z = 2831.7470 in <sup>3</sup>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	29.5800	8.0000	236.6400	0.6163	0.0000	0.0000	0.6163	
4	Top Cover Plate	24.0000	8.0000	192.0000	1024.0000	0.0000	0.0000	1024.0000	
4	Bottom Cover Plate	24.0000	8.0000	192.0000	1024.0000	0.0000	0.0000	1024.0000	
<b>Total</b>		<b>111.33</b>		<b>890.64</b>	<b>2103.35</b>		<b>196.28</b>	<b>2299.63</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	287.45	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	287.45	in <sup>3</sup>
I <sub>y</sub> =	2299.63	in <sup>4</sup>	S <sub>left</sub> =	287.45	in <sup>3</sup>	I <sub>y</sub> =	2299.63	in <sup>4</sup>	S <sub>left</sub> =	287.45	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	111.3300	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	111.3300	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.5449	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.5449	in

Non-composite Capacities*		
	AB	AI
M	7787.30 k-ft	7787.30 k-ft
V	566.16 k	566.16 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
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AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

A<sub>1</sub> = l<sub>w</sub> = **6.0000** in  
C<sub>1</sub> = t<sub>f</sub> = **0.7500** in  
B<sub>1</sub> = l<sub>v</sub> = **6.0000** in

Bottom Angles:

B<sub>2</sub> = l<sub>h</sub> = **6.0000** in  
C<sub>2</sub> = t<sub>f</sub> = **0.7500** in  
A<sub>2</sub> = l<sub>v</sub> = **6.0000** in

Web Plate:

C<sub>3</sub> = **0.5000** in  
\*B<sub>3</sub> = **55.2000** in

d<sub>0</sub> = **48.0000** in

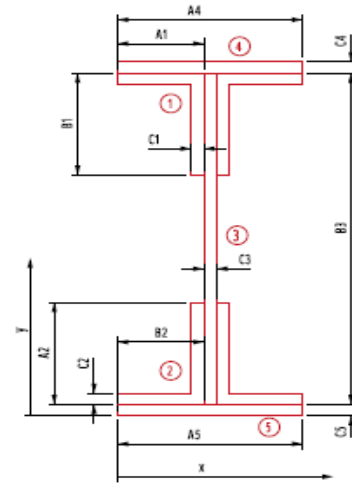
d<sub>0</sub> = stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

C<sub>4</sub> = **1.5000** in  
A<sub>4</sub> = **16.0000** in

Btm Cover Plate:

C<sub>5</sub> = **1.5000** in  
A<sub>5</sub> = **16.0000** in



**Girder 33-34 Section 4**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>0</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg		9.0000	56.3250	506.9250	0.4219	27.2250	6670.8056	6671.2275
	Vertical Leg		7.8750	53.3250	419.9344	18.0879	24.2250	4621.4487	4639.5366
2	Horizontal Leg		9.0000	1.8750	16.8750	0.4219	27.2250	6670.8056	6671.2275
	Vertical Leg		7.8750	4.8750	38.3906	18.0879	24.2250	4621.4487	4639.5366
3	Web Plate		27.6000	29.1000	803.1600	7008.1920	0.0000	0.0000	7008.1920
4	Cover Plate Top		24.0000	57.4500	1378.8000	4.5000	28.3500	19289.3400	19293.8400
	Cover Plate Bottom		24.0000	0.7500	18.0000	4.5000	28.3500	19289.3400	19293.8400
<b>Total</b>			<b>109.35</b>		<b>3182.09</b>	<b>7054.21</b>		<b>61163.19</b>	<b>68217.40</b>
Section Losses			A	y	Ay	I <sub>0</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	29.1000 in	S <sub>top</sub> =	2344.24 in <sup>3</sup>	y-bar =	29.1000 in	S <sub>top</sub> =	2344.24 in <sup>3</sup>
I <sub>x</sub> =	68217.40 in <sup>4</sup>	S <sub>bott.</sub> =	2344.24 in <sup>3</sup>	I <sub>x</sub> =	68217.40 in <sup>4</sup>	S <sub>bott.</sub> =	2344.24 in <sup>3</sup>
C <sub>top</sub> =	29.1000 in	A =	109.3500 in <sup>2</sup>	C <sub>top</sub> =	29.1000 in	A =	109.3500 in <sup>2</sup>
C <sub>bottom</sub> =	29.1000 in	r <sub>x</sub> =	24.9769 in	C <sub>bottom</sub> =	29.1000 in	r <sub>x</sub> =	24.9769 in
J =	44.6281	Z =	2613.2738 in <sup>3</sup>	Z =	<b>2613.2738</b>		<b>in<sup>3</sup></b>





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Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	27.6000	8.0000	220.8000	0.5750	0.0000	0.0000	0.5750	
4	Top Cover Plate	24.0000	8.0000	192.0000	1024.0000	0.0000	0.0000	1024.0000	
4	Bottom Cover Plate	24.0000	8.0000	192.0000	1024.0000	0.0000	0.0000	1024.0000	
<b>Total</b>		<b>109.35</b>		<b>874.80</b>	<b>2103.31</b>		<b>196.28</b>	<b>2299.59</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	287.45	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	287.45	in <sup>3</sup>
I <sub>y</sub> =	2299.59	in <sup>4</sup>	S <sub>left</sub> =	287.45	in <sup>3</sup>	I <sub>y</sub> =	2299.59	in <sup>4</sup>	S <sub>left</sub> =	287.45	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	109.3500	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	109.3500	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.5858	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.5858	in

Non-composite Capacities*		
	AB	AI
M	7186.50 k-ft	7186.50 k-ft
V	528.26 k	528.26 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 56.6400$  in

$d_o = 52.2200$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 1.8750$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 1.8750$  in  
 $A_5 = 16.0000$  in



Girder 33-34 Section 5

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	58.1400	523.2600	0.4219	27.9450	7028.3072	7028.7291
	Vertical Leg	7.8750	55.1400	434.2275	18.0879	24.9450	4900.2426	4918.3305
2	Horizontal Leg	9.0000	2.2500	20.2500	0.4219	27.9450	7028.3072	7028.7291
	Vertical Leg	7.8750	5.2500	41.3438	18.0879	24.9450	4900.2426	4918.3305
3	Web Plate	28.3200	30.1950	855.1224	7571.0915	0.0000	0.0000	7571.0915
4	Cover Plate Top	30.0000	59.4525	1783.5750	8.7891	29.2575	25680.0392	25688.8283
	Cover Plate Bottom	30.0000	0.9375	28.1250	8.7891	29.2575	25680.0392	25688.8283
<b>Total</b>		<b>122.07</b>		<b>3685.90</b>	<b>7625.69</b>		<b>75217.18</b>	<b>82842.87</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	30.1950	in	$S_{top} = 2743.60$	in <sup>3</sup>	y-bar =	30.1950	in	$S_{top} = 2743.60$	in <sup>3</sup>		
$I_x =$	82842.87	n <sup>4</sup>	$S_{bott.} = 2743.60$	in <sup>3</sup>	$I_x =$	82842.87	in <sup>4</sup>	$S_{bott.} = 2743.60$	in <sup>3</sup>		
$C_{top} =$	30.1950	in	A =	122.0700	in <sup>2</sup>	$C_{top} =$	30.1950	in	A =	122.0700	in <sup>2</sup>
$C_{bottom} =$	30.1950	in	$r_x =$	26.0509	in	$C_{bottom} =$	30.1950	in	$r_x =$	26.0509	in
J =	79.0006		Z =	3052.3550	in <sup>3</sup>				Z =	3052.3550	in <sup>3</sup>



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	28.3200	8.0000	226.5600	0.5900	0.0000	0.0000	0.5900	
4	Top Cover Plate	30.0000	8.0000	240.0000	1280.0000	0.0000	0.0000	1280.0000	
4	Bottom Cover Plate	30.0000	8.0000	240.0000	1280.0000	0.0000	0.0000	1280.0000	
<b>Total</b>		<b>122.07</b>		<b>976.56</b>	<b>2615.33</b>		<b>196.28</b>	<b>2811.61</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	351.45	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	351.45	in <sup>3</sup>
I <sub>y</sub> =	2811.61	in <sup>4</sup>	S <sub>left</sub> =	351.45	in <sup>3</sup>	I <sub>y</sub> =	2811.61	in <sup>4</sup>	S <sub>left</sub> =	351.45	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	122.0700	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	122.0700	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.7992	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.7992	in

Non-composite Capacities*		
	AB	AI
M	8393.98 k-ft	8393.98 k-ft
V	542.04 k	542.04 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 59.7600$  in

$d_o = 54.0000$  in

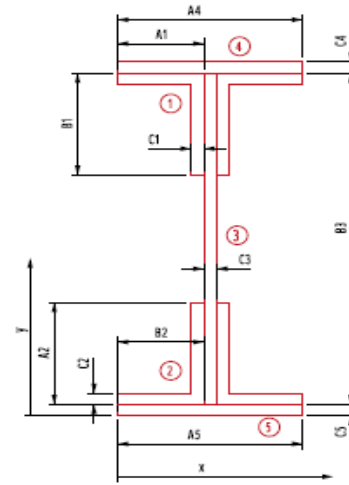
$d_o$  = stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 1.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 1.5000$  in  
 $A_5 = 16.0000$  in



**Girder 33-34 Section 6**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	60.8850	547.9650	0.4219	29.5050	7834.9052	7835.3271
	Vertical Leg	7.8750	57.8850	455.8444	18.0879	26.5050	5532.3058	5550.3937
2	Horizontal Leg	9.0000	1.8750	16.8750	0.4219	29.5050	7834.9052	7835.3271
	Vertical Leg	7.8750	4.8750	38.3906	18.0879	26.5050	5532.3058	5550.3937
3	Web Plate	29.8800	31.3800	937.6344	8892.4314	0.0000	0.0000	8892.4314
4	Cover Plate Top	24.0000	62.0100	1488.2400	4.5000	30.6300	22516.7256	22521.2256
	Cover Plate Bottom	24.0000	0.7500	18.0000	4.5000	30.6300	22516.7256	22521.2256
<b>Total</b>		<b>111.63</b>		<b>3502.95</b>	<b>8938.45</b>		<b>71767.87</b>	<b>80706.32</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	31.3800 in	S <sub>top</sub> =	2571.90 in <sup>3</sup>	y-bar =	31.3800 in	S <sub>top</sub> =	2571.90 in <sup>3</sup>
I <sub>x</sub> =	80706.32 in <sup>4</sup>	S <sub>bottom</sub> =	2571.90 in <sup>3</sup>	I <sub>x</sub> =	80706.32 in <sup>4</sup>	S <sub>bottom</sub> =	2571.90 in <sup>3</sup>
C <sub>top</sub> =	31.3800 in	A =	111.6300 in <sup>2</sup>	C <sub>top</sub> =	31.3800 in	A =	111.6300 in <sup>2</sup>
C <sub>bottom</sub> =	31.3800 in	r <sub>x</sub> =	26.8883 in	C <sub>bottom</sub> =	31.3800 in	r <sub>x</sub> =	26.8883 in
J =	44.8181	Z =	2865.1910 in <sup>3</sup>	J =	44.8181	Z =	2865.1910 in <sup>3</sup>



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	29.8800	8.0000	239.0400	0.6225	0.0000	0.0000	0.6225	
4	Top Cover Plate	24.0000	8.0000	192.0000	1024.0000	0.0000	0.0000	1024.0000	
4	Bottom Cover Plate	24.0000	8.0000	192.0000	1024.0000	0.0000	0.0000	1024.0000	
<b>Total</b>		<b>111.63</b>		<b>893.04</b>	<b>2103.36</b>		<b>196.28</b>	<b>2299.64</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	287.45	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	287.45	in <sup>3</sup>
I <sub>y</sub> =	2299.64	in <sup>4</sup>	S <sub>left</sub> =	287.45	in <sup>3</sup>	I <sub>y</sub> =	2299.64	in <sup>4</sup>	S <sub>left</sub> =	287.45	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	111.6300	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	111.6300	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.5388	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.5388	in

Non-composite Capacities*		
	AB	AI
M	7879.28 k-ft	7879.28 k-ft
V	571.90 k	571.90 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 64.0800$  in

$d_o = 60.0000$  in

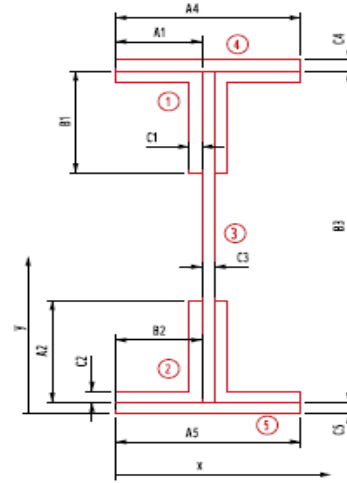
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.6250$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.7500$  in  
 $A_5 = 16.0000$  in



**Girder 33-34 Section 7**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	64.4550	580.0950	0.4219	32.4106	9454.0148	9454.4367
	Vertical Leg	7.8750	61.4550	483.9581	18.0879	29.4106	6811.7378	6829.8256
2	Horizontal Leg	9.0000	1.1250	10.1250	0.4219	30.9194	8604.0914	8604.5133
	Vertical Leg	7.8750	4.1250	32.4844	18.0879	27.9194	6138.5127	6156.6006
3	Web Plate	32.0400	32.7900	1050.5916	10963.6779	0.7456	17.8110	10981.4889
4	Cover Plate Top	10.0000	65.1425	651.4250	0.3255	33.0981	10954.8330	10955.1585
	Cover Plate Bottom	12.0000	0.3750	4.5000	0.5625	31.6694	12035.4214	12035.9839
<b>Total</b>		<b>87.79</b>		<b>2813.18</b>	<b>11001.59</b>		<b>54016.42</b>	<b>65018.01</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	32.0444 in	S <sub>top</sub> =	1946.03 in <sup>3</sup>	y-bar =	32.0444 in	S <sub>top</sub> =	1946.03 in <sup>3</sup>
I <sub>x</sub> =	65018.01 in <sup>4</sup>	S <sub>bottom</sub> =	2029.00 in <sup>3</sup>	I <sub>x</sub> =	65018.01 in <sup>4</sup>	S <sub>bottom</sub> =	2029.00 in <sup>3</sup>
C <sub>top</sub> =	33.4106 in	A =	87.7900 in <sup>2</sup>	C <sub>top</sub> =	33.4106 in	A =	87.7900 in <sup>2</sup>
C <sub>bottom</sub> =	32.0444 in	r <sub>x</sub> =	27.2141 in	C <sub>bottom</sub> =	32.0444 in	r <sub>x</sub> =	27.2141 in
J =	12.5502	Z =	2245.2296 in <sup>3</sup>	Z =	2245.2296 in <sup>3</sup>		



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Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	32.0400	8.0000	256.3200	0.6675	0.0000	0.0000	0.6675	
4	Top Cover Plate	10.0000	8.0000	80.0000	426.6667	0.0000	0.0000	426.6667	
4	Bottom Cover Plate	12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000	
<b>Total</b>		<b>87.79</b>		<b>702.32</b>	<b>994.07</b>		<b>196.28</b>	<b>1190.35</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	148.79	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	148.79	in <sup>3</sup>
I <sub>y</sub> =	1190.35	in <sup>4</sup>	S <sub>left</sub> =	148.79	in <sup>3</sup>	I <sub>y</sub> =	1190.35	in <sup>4</sup>	S <sub>left</sub> =	148.79	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	87.7900	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	87.7900	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.6823	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.6823	in

Non-composite Capacities*		
	AB	AI
M	6174.38 k-ft	6174.38 k-ft
V	613.25 k	613.25 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



Made By CTG  
Checked By DMP

Date 3/23/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 69.0000$  in

$d_o = 59.8100$  in

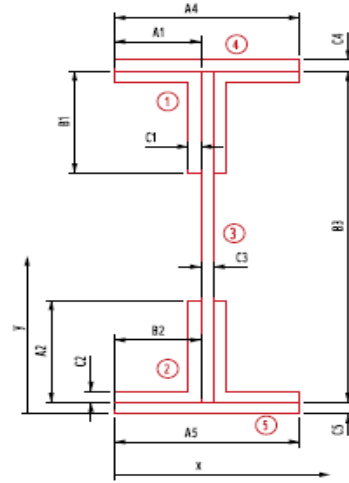
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.6250$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.7500$  in  
 $A_5 = 16.0000$  in



Girder 33-34 Section 8

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	69.3750	624.3750	0.4219	34.9048	10965.0920	10965.5139
	Vertical Leg	7.8750	66.3750	522.7031	18.0879	31.9048	8016.0797	8034.1676
2	Horizontal Leg	9.0000	1.1250	10.1250	0.4219	33.3452	10007.1342	10007.5561
	Vertical Leg	7.8750	4.1250	32.4844	18.0879	30.3452	7251.5557	7269.6436
3	Web Plate	34.5000	35.2500	1216.1250	13687.8750	0.7798	20.9779	13708.8529
4	Cover Plate Top	10.0000	70.0625	700.6250	0.3255	35.5923	12668.1028	12668.4283
	Cover Plate Bottom	12.0000	0.3750	4.5000	0.5625	34.0952	13949.8096	13950.3721
<b>Total</b>		<b>90.25</b>		<b>3110.94</b>	<b>13725.78</b>		<b>62878.75</b>	<b>76604.53</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	34.4702 in	S <sub>top</sub> =	2133.55 in <sup>3</sup>	y-bar =	34.4702 in	S <sub>top</sub> =	2133.55 in <sup>3</sup>
I <sub>x</sub> =	76604.53 in <sup>4</sup>	S <sub>bottom</sub> =	2222.34 in <sup>3</sup>	I <sub>x</sub> =	76604.53 in <sup>4</sup>	S <sub>bottom</sub> =	2222.34 in <sup>3</sup>
C <sub>top</sub> =	35.9048 in	A =	90.2500 in <sup>2</sup>	C <sub>top</sub> =	35.9048 in	A =	90.2500 in <sup>2</sup>
C <sub>bottom</sub> =	34.4702 in	r <sub>x</sub> =	29.1342 in	C <sub>bottom</sub> =	34.4702 in	r <sub>x</sub> =	29.1342 in
J =	12.7552	Z =	2464.2188 in <sup>3</sup>			Z =	2464.2188 in <sup>3</sup>





Made By CTG  
 Checked By DMP

Date 3/23/2012  
 Date 4/2/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
1 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
2 (Left)	Horizontal Leg	4.5000	4.7500	21.3750	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	7.3750	29.0391	0.1846	0.6250	1.5381	1.7227	
2 (Right)	Horizontal Leg	4.5000	11.2500	50.6250	13.5000	3.2500	47.5313	61.0313	
	Vertical Leg	3.9375	8.6250	33.9609	0.1846	0.6250	1.5381	1.7227	
3	Web Plate	34.5000	8.0000	276.0000	0.7188	0.0000	0.0000	0.7188	
4	Top Cover Plate	10.0000	8.0000	80.0000	426.6667	0.0000	0.0000	426.6667	
4	Bottom Cover Plate	12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000	
<b>Total</b>		<b>90.25</b>		<b>722.00</b>	<b>994.12</b>		<b>196.28</b>	<b>1190.40</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	148.80	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	148.80	in <sup>3</sup>
I <sub>y</sub> =	1190.40	in <sup>4</sup>	S <sub>left</sub> =	148.80	in <sup>3</sup>	I <sub>y</sub> =	1190.40	in <sup>4</sup>	S <sub>left</sub> =	148.80	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	90.2500	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	90.2500	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.6318	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.6318	in

Non-composite Capacities*		
	AB	AI
M	5867.25 k-ft	5867.25 k-ft
V	653.13 k	653.13 k

\*Noncompact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



Made By CTG  
Checked By DMP

Date 3/26/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.6250$  in  
 $*B_3 = 66.9600$  in

$d_o = 40.0000$  in

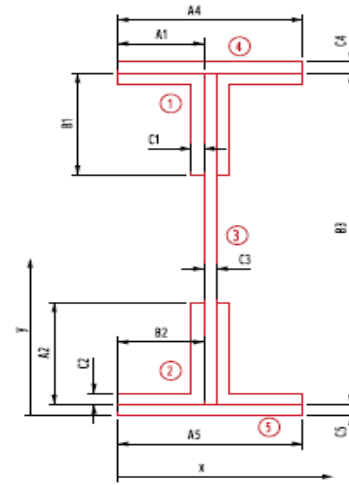
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.7500$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.7500$  in  
 $A_5 = 16.0000$  in



Girder 34-35 Section 1

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	67.3350	606.0150	0.4219	33.1050	9863.4692	9863.8911
	Vertical Leg	7.8750	64.3350	506.6381	18.0879	30.1050	7137.1993	7155.2872
2	Horizontal Leg	9.0000	1.1250	10.1250	0.4219	33.1050	9863.4692	9863.8911
	Vertical Leg	7.8750	4.1250	32.4844	18.0879	30.1050	7137.1993	7155.2872
3	Web Plate	41.8500	34.2300	1432.5255	15636.7001	0.0000	0.0000	15636.7001
4	Cover Plate Top	12.0000	68.0850	817.0200	0.5625	33.8550	13753.9323	13754.4948
	Cover Plate Bottom	12.0000	0.3750	4.5000	0.5625	33.8550	13753.9323	13754.4948
<b>Total</b>		<b>99.60</b>		<b>3409.31</b>	<b>15674.84</b>		<b>61509.20</b>	<b>77184.05</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	34.2300	in	S <sub>top</sub> = 2254.87 in <sup>3</sup>	y-bar =	34.2300	in	S <sub>top</sub> = 2254.87 in <sup>3</sup>
I <sub>x</sub> =	77184.05	in <sup>4</sup>	S <sub>bott.</sub> = 2254.87 in <sup>3</sup>	I <sub>x</sub> =	77184.05	in <sup>4</sup>	S <sub>bott.</sub> = 2254.87 in <sup>3</sup>
C <sub>top</sub> =	34.2300	in	A = 99.6000 in <sup>2</sup>	C <sub>top</sub> =	34.2300	in	A = 99.6000 in <sup>2</sup>
C <sub>bottom</sub> =	34.2300	in	r <sub>x</sub> = 27.8377 in	C <sub>bottom</sub> =	34.2300	in	r <sub>x</sub> = 27.8377 in
J =	16.2773		Z = 2583.1328 in <sup>3</sup>				Z = 2583.1328 in <sup>3</sup>



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Date 3/26/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
3	Web Plate	41.8500	8.0000	334.8000	1.3623	0.0000	0.0000	1.3623	
4	Top Cover Plate	12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000	
4	Bottom Cover Plate	12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000	
<b>Total</b>		<b>99.60</b>		<b>796.80</b>	<b>1080.10</b>		<b>204.95</b>	<b>1285.05</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	160.63	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	160.63	in <sup>3</sup>
I <sub>y</sub> =	1285.05	in <sup>4</sup>	S <sub>left</sub> =	160.63	in <sup>3</sup>	I <sub>y</sub> =	1285.05	in <sup>4</sup>	S <sub>left</sub> =	160.63	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	99.6000	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	99.6000	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5920	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5920	in

Non-composite Capacities*		
	AB	AI
M	7103.62 k-ft	7103.62 k-ft
V	801.01 k	801.01 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



Made By CTG  
Checked By DMP

Date 3/26/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.6250$  in  
 $*B_3 = 64.0800$  in

$d_o = 62.0000$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.7500$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.7500$  in  
 $A_5 = 16.0000$  in



Girder 34-35 Section 2

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	64.4550	580.0950	0.4219	31.6650	9024.0500	9024.4719
	Vertical Leg	7.8750	61.4550	483.9581	18.0879	28.6650	6470.7475	6488.8354
2	Horizontal Leg	9.0000	1.1250	10.1250	0.4219	31.6650	9024.0500	9024.4719
	Vertical Leg	7.8750	4.1250	32.4844	18.0879	28.6650	6470.7475	6488.8354
3	Web Plate	40.0500	32.7900	1313.2395	13704.5974	0.0000	0.0000	13704.5974
4	Cover Plate Top	12.0000	65.2050	782.4600	0.5625	32.4150	12608.7867	12609.3492
	Cover Plate Bottom	12.0000	0.3750	4.5000	0.5625	32.4150	12608.7867	12609.3492
<b>Total</b>		<b>97.80</b>		<b>3206.86</b>	<b>13742.74</b>		<b>56207.17</b>	<b>69949.91</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	32.7900	in	S <sub>top</sub> =	2133.27	in <sup>3</sup>	y-bar =	32.7900	in	S <sub>top</sub> =	2133.27	in <sup>3</sup>
I <sub>x</sub> =	69949.91	in <sup>4</sup>	S <sub>bottom</sub> =	2133.27	in <sup>3</sup>	I <sub>x</sub> =	69949.91	in <sup>4</sup>	S <sub>bottom</sub> =	2133.27	in <sup>3</sup>
C <sub>top</sub> =	32.7900	in	A =	97.8000	in <sup>2</sup>	C <sub>top</sub> =	32.7900	in	A =	97.8000	in <sup>2</sup>
C <sub>bottom</sub> =	32.7900	in	r <sub>x</sub> =	26.7439	in	C <sub>bottom</sub> =	32.7900	in	r <sub>x</sub> =	26.7439	in
J =	16.0430		Z =	2441.0048	in <sup>3</sup>	Z =	2441.0048	in <sup>3</sup>			



Made By CTG  
 Checked By DMP

Date 3/26/2012  
 Date 4/2/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
3	Web Plate	40.0500	8.0000	320.4000	1.3037	0.0000	0.0000	1.3037	
4	Top Cover Plate	12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000	
4	Bottom Cover Plate	12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000	
<b>Total</b>		<b>97.80</b>		<b>782.40</b>	<b>1080.04</b>		<b>204.95</b>	<b>1284.99</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	160.62	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	160.62	in <sup>3</sup>
I <sub>y</sub> =	1284.99	in <sup>4</sup>	S <sub>left</sub> =	160.62	in <sup>3</sup>	I <sub>y</sub> =	1284.99	in <sup>4</sup>	S <sub>left</sub> =	160.62	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	97.8000	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	97.8000	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.6248	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.6248	in

Non-composite Capacities*		
	AB	AI
M	6712.76 k-ft	6712.76 k-ft
V	766.56 k	766.56 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/26/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.6250$  in  
 $*B_3 = 61.3200$  in

$d_o = 62.8125$  in

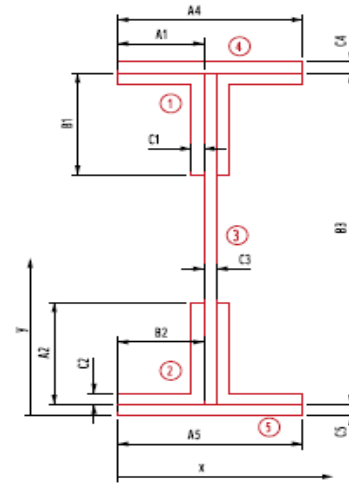
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.7500$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.7500$  in  
 $A_5 = 16.0000$  in



**Girder 34-35 Section 3**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	61.6950	555.2550	0.4219	30.2850	8254.6310	8255.0529
	Vertical Leg	7.8750	58.6950	462.2231	18.0879	27.2850	5862.7109	5880.7988
2	Horizontal Leg	9.0000	1.1250	10.1250	0.4219	30.2850	8254.6310	8255.0529
	Vertical Leg	7.8750	4.1250	32.4844	18.0879	27.2850	5862.7109	5880.7988
3	Web Plate	38.3250	31.4100	1203.7883	12008.9548	0.0000	0.0000	12008.9548
4	Cover Plate Top	12.0000	62.4450	749.3400	0.5625	31.0350	11558.0547	11558.6172
	Cover Plate Bottom	12.0000	0.3750	4.5000	0.5625	31.0350	11558.0547	11558.6172
<b>Total</b>		<b>96.08</b>		<b>3017.72</b>	<b>12047.10</b>		<b>51350.79</b>	<b>63397.89</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	31.4100 in	S <sub>top</sub> =	2018.40 in <sup>3</sup>	y-bar =	31.4100 in	S <sub>top</sub> =	2018.40 in <sup>3</sup>
I <sub>x</sub> =	63397.89 in <sup>4</sup>	S <sub>bottom</sub> =	2018.40 in <sup>3</sup>	I <sub>x</sub> =	63397.89 in <sup>4</sup>	S <sub>bottom</sub> =	2018.40 in <sup>3</sup>
C <sub>top</sub> =	31.4100 in	A =	96.0750 in <sup>2</sup>	C <sub>top</sub> =	31.4100 in	A =	96.0750 in <sup>2</sup>
C <sub>bottom</sub> =	31.4100 in	r <sub>x</sub> =	25.6881 in	C <sub>bottom</sub> =	31.4100 in	r <sub>x</sub> =	25.6881 in
J =	15.8184	Z =	2307.2310 in <sup>3</sup>	Z =	<b>2307.2310</b>		in <sup>3</sup>



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Date 3/26/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg		4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770
	Vertical Leg		3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457
1 (Right)	Horizontal Leg		4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770
	Vertical Leg		3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457
2 (Left)	Horizontal Leg		4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770
	Vertical Leg		3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457
2 (Right)	Horizontal Leg		4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770
	Vertical Leg		3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457
3	Web Plate		38.3250	8.0000	306.6000	1.2476	0.0000	0.0000	1.2476
4	Top Cover Plate		12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000
4	Bottom Cover Plate		12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000
<b>Total</b>			<b>96.08</b>		<b>768.60</b>	<b>1079.99</b>		<b>204.95</b>	<b>1284.94</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	160.62	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	160.62	in <sup>3</sup>
I <sub>y</sub> =	1284.94	in <sup>4</sup>	S <sub>left</sub> =	160.62	in <sup>3</sup>	I <sub>y</sub> =	1284.94	in <sup>4</sup>	S <sub>left</sub> =	160.62	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	96.0750	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	96.0750	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.6571	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.6571	in

Non-composite Capacities*		
	AB	AI
M	6344.89 k-ft	6344.89 k-ft
V	733.54 k	733.54 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/26/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.6250$  in  
 $*B_3 = 64.5600$  in

$d_o = 63.0000$  in

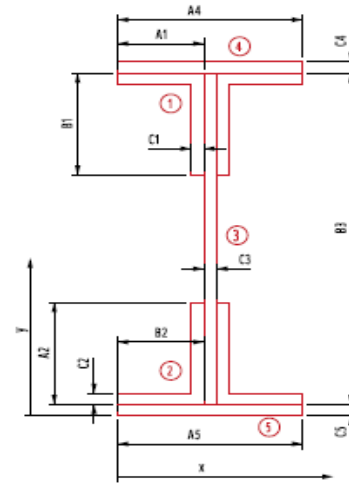
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 1.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 1.5000$  in  
 $A_5 = 16.0000$  in



Girder 34-35 Section 4

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	65.6850	591.1650	0.4219	31.9050	9161.3612	9161.7831
	Vertical Leg	7.8750	62.6850	493.6444	18.0879	28.9050	6579.5548	6597.6427
2	Horizontal Leg	9.0000	1.8750	16.8750	0.4219	31.9050	9161.3612	9161.7831
	Vertical Leg	7.8750	4.8750	38.3906	18.0879	28.9050	6579.5548	6597.6427
3	Web Plate	40.3500	33.7800	1363.0230	14014.8785	0.0000	0.0000	14014.8785
4	Cover Plate Top	24.0000	66.8100	1603.4400	4.5000	33.0300	26183.5416	26188.0416
	Cover Plate Bottom	24.0000	0.7500	18.0000	4.5000	33.0300	26183.5416	26188.0416
<b>Total</b>		<b>122.10</b>		<b>4124.54</b>	<b>14060.90</b>		<b>83848.92</b>	<b>97909.81</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	33.7800	in	$S_{top} = 2898.46$	in <sup>3</sup>	y-bar =	33.7800	in	$S_{top} = 2898.46$	in <sup>3</sup>		
$I_x =$	97909.81	n <sup>4</sup>	$S_{bott.} = 2898.46$	in <sup>3</sup>	$I_x =$	97909.81	in <sup>4</sup>	$S_{bott.} = 2898.46$	in <sup>3</sup>		
$C_{top} =$	33.7800	in	A =	122.1000	in <sup>2</sup>	$C_{top} =$	33.7800	in	A =	122.1000	in <sup>2</sup>
$C_{bottom} =$	33.7800	in	$r_x =$	28.3175	in	$C_{bottom} =$	33.7800	in	$r_x =$	28.3175	in
J =	47.5820		Z =	3266.2328	in <sup>3</sup>				Z =	3266.2328	in <sup>3</sup>





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Date 3/26/2012  
 Date 4/2/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
3	Web Plate	40.3500	8.0000	322.8000	1.3135	0.0000	0.0000	1.3135	
4	Top Cover Plate	24.0000	8.0000	192.0000	1024.0000	0.0000	0.0000	1024.0000	
4	Bottom Cover Plate	24.0000	8.0000	192.0000	1024.0000	0.0000	0.0000	1024.0000	
<b>Total</b>		<b>122.10</b>		<b>976.80</b>	<b>2104.05</b>		<b>204.95</b>	<b>2309.00</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	288.63	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	288.63	in <sup>3</sup>
I <sub>y</sub> =	2309.00	in <sup>4</sup>	S <sub>left</sub> =	288.63	in <sup>3</sup>	I <sub>y</sub> =	2309.00	in <sup>4</sup>	S <sub>left</sub> =	288.63	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	122.1000	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	122.1000	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.3487	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.3487	in

Non-composite Capacities*		
	AB	AI
M	8982.14 k-ft	8982.14 k-ft
V	772.30 k	772.30 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
------------------	-----------

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/26/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.6250$  in  
 $*B_3 = 69.1200$  in

$d_o = 63.0000$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 2.2500$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 2.2500$  in  
 $A_5 = 16.0000$  in



**Girder 34-35 Section 5**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	70.9950	638.9550	0.4219	34.1850	10517.5280	10517.9499
	Vertical Leg	7.8750	67.9950	535.4606	18.0879	31.1850	7658.4708	7676.5587
2	Horizontal Leg	9.0000	2.6250	23.6250	0.4219	34.1850	10517.5280	10517.9499
	Vertical Leg	7.8750	5.6250	44.2969	18.0879	31.1850	7658.4708	7676.5587
3	Web Plate	43.2000	36.8100	1590.1920	17199.2678	0.0000	0.0000	17199.2678
4	Cover Plate Top	36.0000	72.4950	2609.8200	15.1875	35.6850	45843.0921	45858.2796
	Cover Plate Bottom	36.0000	1.1250	40.5000	15.1875	35.6850	45843.0921	45858.2796
<b>Total</b>		<b>148.95</b>		<b>5482.85</b>	<b>17266.66</b>		<b>128038.18</b>	<b>145304.84</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	36.8100 in	S <sub>top</sub> =	3947.43 in <sup>3</sup>	y-bar =	36.8100 in	S <sub>top</sub> =	3947.43 in <sup>3</sup>
I <sub>x</sub> =	145304.84 in <sup>4</sup>	S <sub>bottom</sub> =	3947.43 in <sup>3</sup>	I <sub>x</sub> =	145304.84 in <sup>4</sup>	S <sub>bottom</sub> =	3947.43 in <sup>3</sup>
C <sub>top</sub> =	36.8100 in	A =	148.9500 in <sup>2</sup>	C <sub>top</sub> =	36.8100 in	A =	148.9500 in <sup>2</sup>
C <sub>bottom</sub> =	36.8100 in	r <sub>x</sub> =	31.2334 in	C <sub>bottom</sub> =	36.8100 in	r <sub>x</sub> =	31.2334 in
J =	133.4531	Z =	4422.3098 in <sup>3</sup>	J =	133.4531	Z =	4422.3098 in <sup>3</sup>



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Date 3/26/2012  
 Date 4/2/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457
3	Web Plate	43.2000	8.0000	345.6000	1.4063	0.0000	0.0000	1.4063
4	Top Cover Plate	36.0000	8.0000	288.0000	1536.0000	0.0000	0.0000	1536.0000
4	Bottom Cover Plate	36.0000	8.0000	288.0000	1536.0000	0.0000	0.0000	1536.0000
<b>Total</b>		<b>148.95</b>		<b>1191.60</b>	<b>3128.14</b>		<b>204.95</b>	<b>3333.10</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	416.64	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	416.64	in <sup>3</sup>
I <sub>y</sub> =	3333.10	in <sup>4</sup>	S <sub>left</sub> =	416.64	in <sup>3</sup>	I <sub>y</sub> =	3333.10	in <sup>4</sup>	S <sub>left</sub> =	416.64	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	148.9500	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	148.9500	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.7305	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.7305	in

Non-composite Capacities*		
	AB	AI
M	12161.35 k-ft	12161.35 k-ft
V	826.85 k	826.85 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/26/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.6250$  in  
 $*B_3 = 73.6800$  in

$d_o = 63.0000$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 2.2500$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 2.2500$  in  
 $A_5 = 16.0000$  in



Girder 34-35 Section 6

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	75.5550	679.9950	0.4219	36.4650	11967.2660	11967.6879
	Vertical Leg	7.8750	72.5550	571.3706	18.0879	33.4650	8819.2615	8837.3494
2	Horizontal Leg	9.0000	2.6250	23.6250	0.4219	36.4650	11967.2660	11967.6879
	Vertical Leg	7.8750	5.6250	44.2969	18.0879	33.4650	8819.2615	8837.3494
3	Web Plate	46.0500	39.0900	1800.0945	20832.7990	0.0000	0.0000	20832.7990
4	Cover Plate Top	36.0000	77.0550	2773.9800	15.1875	37.9650	51888.2841	51903.4716
	Cover Plate Bottom	36.0000	1.1250	40.5000	15.1875	37.9650	51888.2841	51903.4716
<b>Total</b>		<b>151.80</b>		<b>5933.86</b>	<b>20900.19</b>		<b>145349.62</b>	<b>166249.82</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	39.0900 in	S <sub>top</sub> =	4253.00 in <sup>3</sup>	y-bar =	39.0900 in	S <sub>top</sub> =	4253.00 in <sup>3</sup>
I <sub>x</sub> =	166249.82 in <sup>4</sup>	S <sub>bott.</sub> =	4253.00 in <sup>3</sup>	I <sub>x</sub> =	166249.82 in <sup>4</sup>	S <sub>bott.</sub> =	4253.00 in <sup>3</sup>
C <sub>top</sub> =	39.0900 in	A =	151.8000 in <sup>2</sup>	C <sub>top</sub> =	39.0900 in	A =	151.8000 in <sup>2</sup>
C <sub>bottom</sub> =	39.0900 in	r <sub>x</sub> =	33.0937 in	C <sub>bottom</sub> =	39.0900 in	r <sub>x</sub> =	33.0937 in
J =	133.8242	Z =	4765.1648 in <sup>3</sup>	Z =	4765.1648 in <sup>3</sup>		



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Date 3/26/2012  
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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
3	Web Plate	46.0500	8.0000	368.4000	1.4990	0.0000	0.0000	1.4990	
4	Top Cover Plate	36.0000	8.0000	288.0000	1536.0000	0.0000	0.0000	1536.0000	
4	Bottom Cover Plate	36.0000	8.0000	288.0000	1536.0000	0.0000	0.0000	1536.0000	
<b>Total</b>		<b>151.80</b>		<b>1214.40</b>	<b>3128.24</b>		<b>204.95</b>	<b>3333.19</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	416.65	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	416.65	in <sup>3</sup>
I <sub>y</sub> =	3333.19	in <sup>4</sup>	S <sub>left</sub> =	416.65	in <sup>3</sup>	I <sub>y</sub> =	3333.19	in <sup>4</sup>	S <sub>left</sub> =	416.65	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	151.8000	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	151.8000	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.6859	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.6859	in

Non-composite Capacities*		
	AB	AI
M	13104.20 k-ft	13104.20 k-ft
V	881.40 k	881.40 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.6250$  in  
 $*B_3 = 76.5600$  in

$d_o = 72.0000$  in

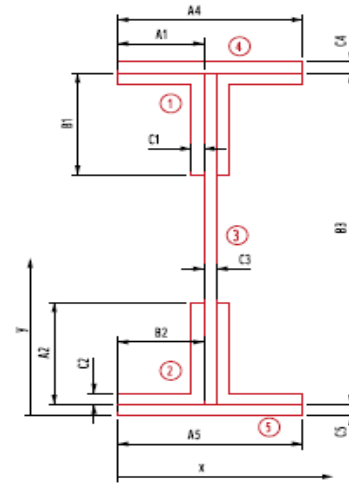
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 3.0000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 3.0000$  in  
 $A_5 = 16.0000$  in



Girder 35-36 Section 1

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	79.1850	712.6650	0.4219	37.9050	12931.1012	12931.5231
	Vertical Leg	7.8750	76.1850	599.9569	18.0879	34.9050	9594.5773	9612.6652
2	Horizontal Leg	9.0000	3.3750	30.3750	0.4219	37.9050	12931.1012	12931.5231
	Vertical Leg	7.8750	6.3750	50.2031	18.0879	34.9050	9594.5773	9612.6652
3	Web Plate	47.8500	41.2800	1975.2480	23372.4665	0.0000	0.0000	23372.4665
4	Cover Plate Top	48.0000	81.0600	3890.8800	36.0000	39.7800	75957.5232	75993.5232
	Cover Plate Bottom	48.0000	1.5000	72.0000	36.0000	39.7800	75957.5232	75993.5232
<b>Total</b>		<b>177.60</b>		<b>7331.33</b>	<b>23481.49</b>		<b>196966.40</b>	<b>220447.89</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar = 41.2800 in	S <sub>top</sub> = 5340.31 in <sup>3</sup>			y-bar = 41.2800 in	S <sub>top</sub> = 5340.31 in <sup>3</sup>		
I <sub>x</sub> = 220447.89 in <sup>4</sup>	S <sub>bottom</sub> = 5340.31 in <sup>3</sup>			I <sub>x</sub> = 220447.89 in <sup>4</sup>	S <sub>bottom</sub> = 5340.31 in <sup>3</sup>		
C <sub>top</sub> = 41.2800 in	A = 177.6000 in <sup>2</sup>			C <sub>top</sub> = 41.2800 in	A = 177.6000 in <sup>2</sup>		
C <sub>bottom</sub> = 41.2800 in	r <sub>x</sub> = 35.2315 in			C <sub>bottom</sub> = 41.2800 in	r <sub>x</sub> = 35.2315 in		
J = 300.5586	Z = 5966.7728 in <sup>3</sup>			Z = 5966.7728 in <sup>3</sup>			



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
3	Web Plate	47.8500	8.0000	382.8000	1.5576	0.0000	0.0000	1.5576	
4	Top Cover Plate	48.0000	8.0000	384.0000	2048.0000	0.0000	0.0000	2048.0000	
4	Bottom Cover Plate	48.0000	8.0000	384.0000	2048.0000	0.0000	0.0000	2048.0000	
<b>Total</b>		<b>177.60</b>		<b>1420.80</b>	<b>4152.30</b>		<b>204.95</b>	<b>4357.25</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	544.66	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	544.66	in <sup>3</sup>
I <sub>y</sub> =	4357.25	in <sup>4</sup>	S <sub>left</sub> =	544.66	in <sup>3</sup>	I <sub>y</sub> =	4357.25	in <sup>4</sup>	S <sub>left</sub> =	544.66	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	177.6000	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	177.6000	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.9532	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.9532	in

Non-composite Capacities*		
	AB	AI
M	16408.63 k-ft	16408.63 k-ft
V	915.85 k	915.85 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/27/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.6250$  in  
 $*B_3 = 73.9200$  in

$d_o = 60.0000$  in

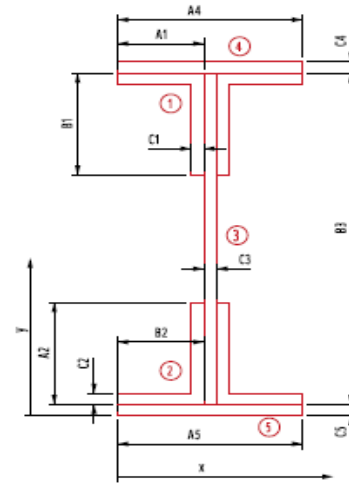
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 2.2500$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 2.2500$  in  
 $A_5 = 16.0000$  in



**Girder 35-36 Section 2**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	75.7950	682.1550	0.4219	36.5850	12046.1600	12046.5819
	Vertical Leg	7.8750	72.7950	573.2606	18.0879	33.5850	8882.6238	8900.7117
2	Horizontal Leg	9.0000	2.6250	23.6250	0.4219	36.5850	12046.1600	12046.5819
	Vertical Leg	7.8750	5.6250	44.2969	18.0879	33.5850	8882.6238	8900.7117
3	Web Plate	46.2000	39.2100	1811.5020	21037.0406	0.0000	0.0000	21037.0406
4	Cover Plate Top	36.0000	77.2950	2782.6200	15.1875	38.0850	52216.8201	52232.0076
	Cover Plate Bottom	36.0000	1.1250	40.5000	15.1875	38.0850	52216.8201	52232.0076
<b>Total</b>		<b>151.95</b>		<b>5957.96</b>	<b>21104.44</b>		<b>146291.21</b>	<b>167395.64</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	39.2100 in	S <sub>top</sub> =	4269.21 in <sup>3</sup>	y-bar =	39.2100 in	S <sub>top</sub> =	4269.21 in <sup>3</sup>
I <sub>x</sub> =	167395.64 in <sup>4</sup>	S <sub>bottom</sub> =	4269.21 in <sup>3</sup>	I <sub>x</sub> =	167395.64 in <sup>4</sup>	S <sub>bottom</sub> =	4269.21 in <sup>3</sup>
C <sub>top</sub> =	39.2100 in	A =	151.9500 in <sup>2</sup>	C <sub>top</sub> =	39.2100 in	A =	151.9500 in <sup>2</sup>
C <sub>bottom</sub> =	39.2100 in	r <sub>x</sub> =	33.1911 in	C <sub>bottom</sub> =	39.2100 in	r <sub>x</sub> =	33.1911 in
J =	133.8438	Z =	4783.3898 in <sup>3</sup>	Z =	4783.3898 in <sup>3</sup>		





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Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457
3	Web Plate	46.2000	8.0000	369.6000	1.5039	0.0000	0.0000	1.5039
4	Top Cover Plate	36.0000	8.0000	288.0000	1536.0000	0.0000	0.0000	1536.0000
4	Bottom Cover Plate	36.0000	8.0000	288.0000	1536.0000	0.0000	0.0000	1536.0000
<b>Total</b>		<b>151.95</b>		<b>1215.60</b>	<b>3128.24</b>		<b>204.95</b>	<b>3333.19</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	416.65	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	416.65	in <sup>3</sup>
I <sub>y</sub> =	3333.19	in <sup>4</sup>	S <sub>left</sub> =	416.65	in <sup>3</sup>	I <sub>y</sub> =	3333.19	in <sup>4</sup>	S <sub>left</sub> =	416.65	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	151.9500	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	151.9500	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.6836	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.6836	in

Non-composite Capacities*		
	AB	AI
M	13154.32 k-ft	13154.32 k-ft
V	884.27 k	884.27 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

**Top Angles:**

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

**Bottom Angles:**

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

**Web Plate:**

$C_3 = 0.6250$  in  
 $*B_3 = 71.4000$  in

$d_o = 60.0000$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

**Top Cover Plate:**

$C_4 = 1.5000$  in  
 $A_4 = 16.0000$  in

**Btm Cover Plate:**

$C_5 = 1.5000$  in  
 $A_5 = 16.0000$  in



**Girder 35-36 Section 3**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	72.5250	652.7250	0.4219	35.3250	11230.7006	11231.1225
	Vertical Leg	7.8750	69.5250	547.5094	18.0879	32.3250	8228.6318	8246.7197
2	Horizontal Leg	9.0000	1.8750	16.8750	0.4219	35.3250	11230.7006	11231.1225
	Vertical Leg	7.8750	4.8750	38.3906	18.0879	32.3250	8228.6318	8246.7197
3	Web Plate	44.6250	37.2000	1660.0500	18958.0388	0.0000	0.0000	18958.0388
4	Cover Plate Top	24.0000	73.6500	1767.6000	4.5000	36.4500	31886.4600	31890.9600
	Cover Plate Bottom	24.0000	0.7500	18.0000	4.5000	36.4500	31886.4600	31890.9600
<b>Total</b>		<b>126.38</b>		<b>4701.15</b>	<b>19004.06</b>		<b>102691.58</b>	<b>121695.64</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	37.2000 in	S <sub>top</sub> =	3271.39 in <sup>3</sup>	y-bar =	37.2000 in	S <sub>top</sub> =	3271.39 in <sup>3</sup>
I <sub>x</sub> =	121695.64 in <sup>4</sup>	S <sub>bottom</sub> =	3271.39 in <sup>3</sup>	I <sub>x</sub> =	121695.64 in <sup>4</sup>	S <sub>bottom</sub> =	3271.39 in <sup>3</sup>
C <sub>top</sub> =	37.2000 in	A =	126.3750 in <sup>2</sup>	C <sub>top</sub> =	37.2000 in	A =	126.3750 in <sup>2</sup>
C <sub>bottom</sub> =	37.2000 in	r <sub>x</sub> =	31.0318 in	C <sub>bottom</sub> =	37.2000 in	r <sub>x</sub> =	31.0318 in
J =	48.1387	Z =	3691.1250 in <sup>3</sup>	Z =	3691.1250 in <sup>3</sup>		



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
3	Web Plate	44.6250	8.0000	357.0000	1.4526	0.0000	0.0000	1.4526	
4	Top Cover Plate	24.0000	8.0000	192.0000	1024.0000	0.0000	0.0000	1024.0000	
4	Bottom Cover Plate	24.0000	8.0000	192.0000	1024.0000	0.0000	0.0000	1024.0000	
<b>Total</b>		<b>126.38</b>		<b>1011.00</b>	<b>2104.19</b>		<b>204.95</b>	<b>2309.14</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	288.64	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	288.64	in <sup>3</sup>
I <sub>y</sub> =	2309.14	in <sup>4</sup>	S <sub>left</sub> =	288.64	in <sup>3</sup>	I <sub>y</sub> =	2309.14	in <sup>4</sup>	S <sub>left</sub> =	288.64	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	126.3750	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	126.3750	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.2746	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.2746	in

Non-composite Capacities*		
	AB	AI
M	10150.59 k-ft	10150.59 k-ft
V	854.12 k	854.12 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.6250$  in  
 $*B_3 = 68.1600$  in

$d_o = 60.0000$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.7500$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.7500$  in  
 $A_5 = 16.0000$  in



**Girder 35-36 Section 4**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	68.5350	616.8150	0.4219	33.7050	10224.2432	10224.6651
	Vertical Leg	7.8750	65.5350	516.0881	18.0879	30.7050	7424.5266	7442.6145
2	Horizontal Leg	9.0000	1.1250	10.1250	0.4219	33.7050	10224.2432	10224.6651
	Vertical Leg	7.8750	4.1250	32.4844	18.0879	30.7050	7424.5266	7442.6145
3	Web Plate	42.6000	34.8300	1483.7580	16492.5389	0.0000	0.0000	16492.5389
4	Cover Plate Top	12.0000	69.2850	831.4200	0.5625	34.4550	14245.7643	14246.3268
	Cover Plate Bottom	12.0000	0.3750	4.5000	0.5625	34.4550	14245.7643	14246.3268
<b>Total</b>		<b>100.35</b>		<b>3495.19</b>	<b>16530.68</b>		<b>63789.07</b>	<b>80319.75</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	34.8300	in	$S_{top} = 2306.05$	in <sup>3</sup>	y-bar =	34.8300	in	$S_{top} = 2306.05$	in <sup>3</sup>		
$I_x =$	80319.75	n <sup>4</sup>	$S_{bott.} = 2306.05$	in <sup>3</sup>	$I_x =$	80319.75	in <sup>4</sup>	$S_{bott.} = 2306.05$	in <sup>3</sup>		
$C_{top} =$	34.8300	in	A =	100.3500	in <sup>2</sup>	$C_{top} =$	34.8300	in	A =	100.3500	in <sup>2</sup>
$C_{bottom} =$	34.8300	in	$r_x =$	28.2913	in	$C_{bottom} =$	34.8300	in	$r_x =$	28.2913	in
J =	16.3750		Z =	2643.1178	in <sup>3</sup>				Z =	2643.1178	in <sup>3</sup>



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Date 3/27/2012  
 Date 4/2/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
3	Web Plate	42.6000	8.0000	340.8000	1.3867	0.0000	0.0000	1.3867	
4	Top Cover Plate	12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000	
4	Bottom Cover Plate	12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000	
<b>Total</b>		<b>100.35</b>		<b>802.80</b>	<b>1080.13</b>		<b>204.95</b>	<b>1285.08</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	160.63	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	160.63	in <sup>3</sup>
I <sub>y</sub> =	1285.08	in <sup>4</sup>	S <sub>left</sub> =	160.63	in <sup>3</sup>	I <sub>y</sub> =	1285.08	in <sup>4</sup>	S <sub>left</sub> =	160.63	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	100.3500	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	100.3500	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5785	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5785	in

Non-composite Capacities*		
	AB	AI
M	7268.57 k-ft	7268.57 k-ft
V	815.36 k	815.36 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/27/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.6250$  in  
 $*B_3 = 66.0000$  in

$d_o = 48.0000$  in

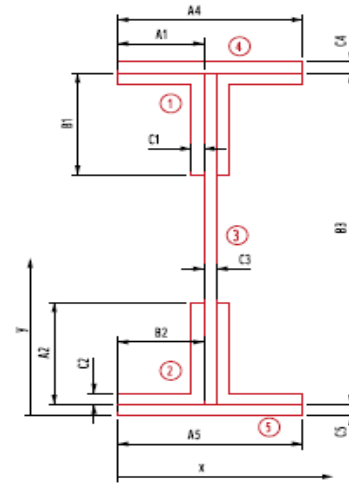
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 1.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 1.5000$  in  
 $A_5 = 16.0000$  in



**Girder 35-36 Section 5**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	67.1250	604.1250	0.4219	32.6250	9579.5156	9579.9375
	Vertical Leg	7.8750	64.1250	504.9844	18.0879	29.6250	6911.4199	6929.5078
2	Horizontal Leg	9.0000	1.8750	16.8750	0.4219	32.6250	9579.5156	9579.9375
	Vertical Leg	7.8750	4.8750	38.3906	18.0879	29.6250	6911.4199	6929.5078
3	Web Plate	41.2500	34.5000	1423.1250	14973.7500	0.0000	0.0000	14973.7500
4	Cover Plate Top	24.0000	68.2500	1638.0000	4.5000	33.7500	27337.5000	27342.0000
	Cover Plate Bottom	24.0000	0.7500	18.0000	4.5000	33.7500	27337.5000	27342.0000
<b>Total</b>		<b>123.00</b>		<b>4243.50</b>	<b>15019.77</b>		<b>87656.87</b>	<b>102676.64</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	34.5000 in	S <sub>top</sub> =	2976.13 in <sup>3</sup>	y-bar =	34.5000 in	S <sub>top</sub> =	2976.13 in <sup>3</sup>
I <sub>x</sub> =	102676.64 in <sup>4</sup>	S <sub>bott.</sub> =	2976.13 in <sup>3</sup>	I <sub>x</sub> =	102676.64 in <sup>4</sup>	S <sub>bott.</sub> =	2976.13 in <sup>3</sup>
C <sub>top</sub> =	34.5000 in	A =	123.0000 in <sup>2</sup>	C <sub>top</sub> =	34.5000 in	A =	123.0000 in <sup>2</sup>
C <sub>bottom</sub> =	34.5000 in	r <sub>x</sub> =	28.8924 in	C <sub>bottom</sub> =	34.5000 in	r <sub>x</sub> =	28.8924 in
J =	47.6992	Z =	3354.4688 in <sup>3</sup>	Z =	3354.4688		in <sup>3</sup>



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Date 3/27/2012  
 Date 4/2/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
3	Web Plate	41.2500	8.0000	330.0000	1.3428	0.0000	0.0000	1.3428	
4	Top Cover Plate	24.0000	8.0000	192.0000	1024.0000	0.0000	0.0000	1024.0000	
4	Bottom Cover Plate	24.0000	8.0000	192.0000	1024.0000	0.0000	0.0000	1024.0000	
<b>Total</b>		<b>123.00</b>		<b>984.00</b>	<b>2104.08</b>		<b>204.95</b>	<b>2309.03</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	288.63	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	288.63	in <sup>3</sup>
I <sub>y</sub> =	2309.03	in <sup>4</sup>	S <sub>left</sub> =	288.63	in <sup>3</sup>	I <sub>y</sub> =	2309.03	in <sup>4</sup>	S <sub>left</sub> =	288.63	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	123.0000	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	123.0000	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.3327	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.3327	in

Non-composite Capacities*		
	AB	AI
M	9224.79 k-ft	9224.79 k-ft
V	789.53 k	789.53 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/27/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.6250$  in  
 $*B_3 = 63.9600$  in

$d_o = 48.0000$  in

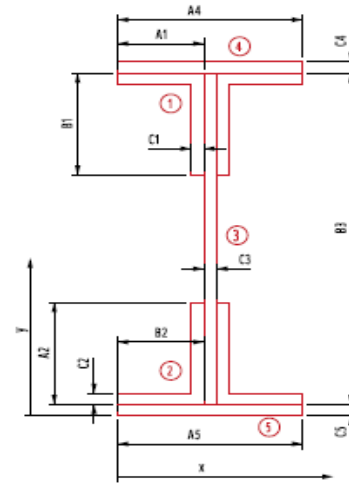
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 2.1250$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 2.1250$  in  
 $A_5 = 16.0000$  in



**Girder 35-36 Section 6**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	65.7100	591.3900	0.4219	31.6050	8989.8842	8990.3061
	Vertical Leg	7.8750	62.7100	493.8413	18.0879	28.6050	6443.6874	6461.7753
2	Horizontal Leg	9.0000	2.5000	22.5000	0.4219	31.6050	8989.8842	8990.3061
	Vertical Leg	7.8750	5.5000	43.3125	18.0879	28.6050	6443.6874	6461.7753
3	Web Plate	39.9750	34.1050	1363.3474	13627.7493	0.0000	0.0000	13627.7493
4	Cover Plate Top	34.0000	67.1475	2283.0150	12.7943	33.0425	37121.4314	37134.2257
	Cover Plate Bottom	34.0000	1.0625	36.1250	12.7943	33.0425	37121.4314	37134.2257
<b>Total</b>		<b>141.73</b>		<b>4833.53</b>	<b>13690.36</b>		<b>105110.01</b>	<b>118800.36</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	34.1050	in	S <sub>top</sub> =	3483.37	in <sup>3</sup>	y-bar =	34.1050	in	S <sub>top</sub> =	3483.37	in <sup>3</sup>
I <sub>x</sub> =	118800.36	in <sup>4</sup>	S <sub>bottom</sub> =	3483.37	in <sup>3</sup>	I <sub>x</sub> =	118800.36	in <sup>4</sup>	S <sub>bottom</sub> =	3483.37	in <sup>3</sup>
C <sub>top</sub> =	34.1050	in	A =	141.7250	in <sup>2</sup>	C <sub>top</sub> =	34.1050	in	A =	141.7250	in <sup>2</sup>
C <sub>bottom</sub> =	34.1050	in	r <sub>x</sub> =	28.9525	in	C <sub>bottom</sub> =	34.1050	in	r <sub>x</sub> =	28.9525	in
J =	113.8874		Z =	3905.5090	in <sup>3</sup>	Z =	3905.5090	in <sup>3</sup>			





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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
3	Web Plate	39.9750	8.0000	319.8000	1.3013	0.0000	0.0000	1.3013	
4	Top Cover Plate	34.0000	8.0000	272.0000	1450.6667	0.0000	0.0000	1450.6667	
4	Bottom Cover Plate	34.0000	8.0000	272.0000	1450.6667	0.0000	0.0000	1450.6667	
<b>Total</b>		<b>141.73</b>		<b>1133.80</b>	<b>2957.37</b>		<b>204.95</b>	<b>3162.33</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	395.29	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	395.29	in <sup>3</sup>
I <sub>y</sub> =	3162.33	in <sup>4</sup>	S <sub>left</sub> =	395.29	in <sup>3</sup>	I <sub>y</sub> =	3162.33	in <sup>4</sup>	S <sub>left</sub> =	395.29	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	141.7250	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	141.7250	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.7237	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.7237	in

Non-composite Capacities*		
	AB	AI
M	10740.15 k-ft	10740.15 k-ft
V	765.12 k	765.12 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/27/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.6250$  in  
 $*B_3 = 61.8000$  in

$d_o = 60.0000$  in

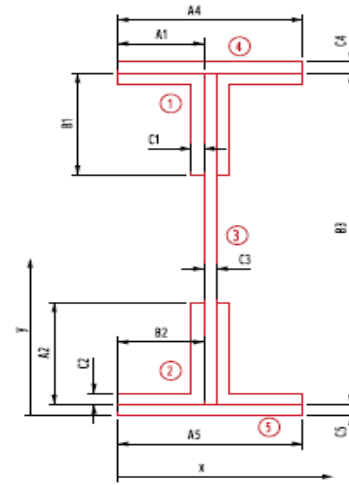
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 2.8750$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 2.8750$  in  
 $A_5 = 16.0000$  in



**Girder 35-36 Section 7**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	64.3000	578.7000	0.4219	30.5250	8385.9806	8386.4025
	Vertical Leg	7.8750	61.3000	482.7375	18.0879	27.5250	5966.3018	5984.3897
2	Horizontal Leg	9.0000	3.2500	29.2500	0.4219	30.5250	8385.9806	8386.4025
	Vertical Leg	7.8750	6.2500	49.2188	18.0879	27.5250	5966.3018	5984.3897
3	Web Plate	38.6250	33.7750	1304.5594	12293.1788	0.0000	0.0000	12293.1788
4	Cover Plate Top	46.0000	66.1125	3041.1750	31.6849	32.3375	48102.8397	48134.5246
	Cover Plate Bottom	46.0000	1.4375	66.1250	31.6849	32.3375	48102.8397	48134.5246
<b>Total</b>		<b>164.38</b>		<b>5551.77</b>	<b>12393.57</b>		<b>124910.24</b>	<b>137303.81</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	33.7750 in	S <sub>top</sub> =	4065.25 in <sup>3</sup>	y-bar =	33.7750 in	S <sub>top</sub> =	4065.25 in <sup>3</sup>
I <sub>x</sub> =	137303.81 in <sup>4</sup>	S <sub>bottom</sub> =	4065.25 in <sup>3</sup>	I <sub>x</sub> =	137303.81 in <sup>4</sup>	S <sub>bottom</sub> =	4065.25 in <sup>3</sup>
C <sub>top</sub> =	33.7750 in	A =	164.3750 in <sup>2</sup>	C <sub>top</sub> =	33.7750 in	A =	164.3750 in <sup>2</sup>
C <sub>bottom</sub> =	33.7750 in	r <sub>x</sub> =	28.9017 in	C <sub>bottom</sub> =	33.7750 in	r <sub>x</sub> =	28.9017 in
J =	264.8366	Z =	4554.7750 in <sup>3</sup>	Z =	4554.7750 in <sup>3</sup>		



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
3	Web Plate	38.6250	8.0000	309.0000	1.2573	0.0000	0.0000	1.2573	
4	Top Cover Plate	46.0000	8.0000	368.0000	1962.6667	0.0000	0.0000	1962.6667	
4	Bottom Cover Plate	46.0000	8.0000	368.0000	1962.6667	0.0000	0.0000	1962.6667	
<b>Total</b>		<b>164.38</b>		<b>1315.00</b>	<b>3981.33</b>		<b>204.95</b>	<b>4186.28</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	523.29	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	523.29	in <sup>3</sup>
I <sub>y</sub> =	4186.28	in <sup>4</sup>	S <sub>left</sub> =	523.29	in <sup>3</sup>	I <sub>y</sub> =	4186.28	in <sup>4</sup>	S <sub>left</sub> =	523.29	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	164.3750	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	164.3750	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	5.0466	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	5.0466	in

Non-composite Capacities*		
	AB	AI
M	12525.63 k-ft	12525.63 k-ft
V	739.28 k	739.28 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/27/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.6250$  in  
 $*B_3 = 60.7200$  in

$d_o = 60.0000$  in

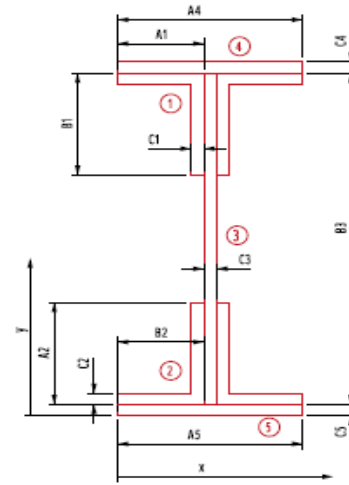
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 3.3750$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 3.3750$  in  
 $A_5 = 16.0000$  in



**Girder 35-36 Section 8**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	63.7200	573.4800	0.4219	29.9850	8091.9020	8092.3239
	Vertical Leg	7.8750	60.7200	478.1700	18.0879	26.9850	5734.4980	5752.5859
2	Horizontal Leg	9.0000	3.7500	33.7500	0.4219	29.9850	8091.9020	8092.3239
	Vertical Leg	7.8750	6.7500	53.1563	18.0879	26.9850	5734.4980	5752.5859
3	Web Plate	37.9500	33.7350	1280.2433	11659.8794	0.0000	0.0000	11659.8794
4	Cover Plate Top	54.0000	65.7825	3552.2550	51.2578	32.0475	55460.2818	55511.5397
	Cover Plate Bottom	54.0000	1.6875	91.1250	51.2578	32.0475	55460.2818	55511.5397
<b>Total</b>		<b>179.70</b>		<b>6062.18</b>	<b>11799.41</b>		<b>138573.36</b>	<b>150372.78</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	33.7350 in	S <sub>top</sub> =	4457.47 in <sup>3</sup>	y-bar =	33.7350 in	S <sub>top</sub> =	4457.47 in <sup>3</sup>
I <sub>x</sub> =	150372.78 in <sup>4</sup>	S <sub>bottom</sub> =	4457.47 in <sup>3</sup>	I <sub>x</sub> =	150372.78 in <sup>4</sup>	S <sub>bottom</sub> =	4457.47 in <sup>3</sup>
C <sub>top</sub> =	33.7350 in	A =	179.7000 in <sup>2</sup>	C <sub>top</sub> =	33.7350 in	A =	179.7000 in <sup>2</sup>
C <sub>bottom</sub> =	33.7350 in	r <sub>x</sub> =	28.9275 in	C <sub>bottom</sub> =	33.7350 in	r <sub>x</sub> =	28.9275 in
J =	421.3320	Z =	5001.9548 in <sup>3</sup>	Z =	5001.9548 in <sup>3</sup>		



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Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457
3	Web Plate	37.9500	8.0000	303.6000	1.2354	0.0000	0.0000	1.2354
4	Top Cover Plate	54.0000	8.0000	432.0000	2304.0000	0.0000	0.0000	2304.0000
4	Bottom Cover Plate	54.0000	8.0000	432.0000	2304.0000	0.0000	0.0000	2304.0000
<b>Total</b>		<b>179.70</b>		<b>1437.60</b>	<b>4663.97</b>		<b>204.95</b>	<b>4868.93</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	608.62	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	608.62	in <sup>3</sup>
I <sub>y</sub> =	4868.93	in <sup>4</sup>	S <sub>left</sub> =	608.62	in <sup>3</sup>	I <sub>y</sub> =	4868.93	in <sup>4</sup>	S <sub>left</sub> =	608.62	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	179.7000	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	179.7000	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	5.2053	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	5.2053	in

Non-composite Capacities*		
	AB	AI
M	13755.38 k-ft	13755.38 k-ft
V	726.36 k	726.36 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Job No. P402110046  
 Sheet No. \_\_\_\_\_

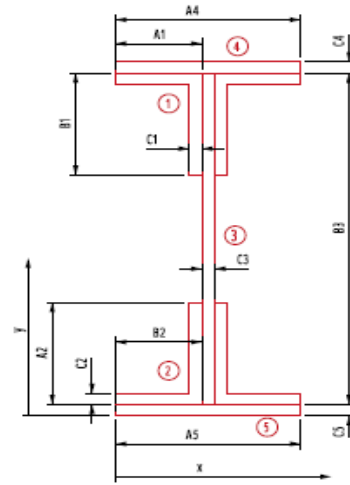
Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles: Bottom Angles:  
 $A_1 = l_w = 6.0000$  in  $B_2 = l_h = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  $C_2 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in  $A_2 = l_v = 6.0000$  in

Web Plate:  $C_3 = 0.6250$  in  $d_0 = 50.0000$  in  
 $*B_3 = 61.5600$  in  $d_0 =$  stiffener spacing for shear check  
 Use "N/A" for no stiffeners

Top Cover Plate:  $C_4 = 2.8750$  in  $C_5 = 2.8750$  in  
 $A_4 = 16.0000$  in  $A_5 = 16.0000$  in



Girder 35-36 Section 9

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	64.0600	576.5400	0.4219	30.4050	8320.1762	8320.5981
	Vertical Leg	7.8750	61.0600	480.8475	18.0879	27.4050	5914.3929	5932.4808
2	Horizontal Leg	9.0000	3.2500	29.2500	0.4219	30.4050	8320.1762	8320.5981
	Vertical Leg	7.8750	6.2500	49.2188	18.0879	27.4050	5914.3929	5932.4808
3	Web Plate	38.4750	33.6550	1294.8761	12150.5127	0.0000	0.0000	12150.5127
4	Cover Plate Top	46.0000	65.8725	3030.1350	31.6849	32.2175	47746.4961	47778.1810
	Cover Plate Bottom	46.0000	1.4375	66.1250	31.6849	32.2175	47746.4961	47778.1810
<b>Total</b>		<b>164.23</b>		<b>5526.99</b>	<b>12250.90</b>		<b>123962.13</b>	<b>136213.03</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	33.6550	in	S <sub>top</sub> =	4047.33	in <sup>3</sup>	y-bar =	33.6550
I <sub>x</sub> =	136213.03	in <sup>4</sup>	S <sub>bottom</sub> =	4047.33	in <sup>3</sup>	I <sub>x</sub> =	136213.03
C <sub>top</sub> =	33.6550	in	A =	164.2250	in <sup>2</sup>	C <sub>top</sub> =	33.6550
C <sub>bottom</sub> =	33.6550	in	r <sub>x</sub> =	28.7998	in	C <sub>bottom</sub> =	33.6550
J =	264.8171		Z =	4535.0590	in <sup>3</sup>	Z =	4535.0590



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Date 3/27/2012  
 Date 4/2/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457
3	Web Plate	38.4750	8.0000	307.8000	1.2524	0.0000	0.0000	1.2524
4	Top Cover Plate	46.0000	8.0000	368.0000	1962.6667	0.0000	0.0000	1962.6667
4	Bottom Cover Plate	46.0000	8.0000	368.0000	1962.6667	0.0000	0.0000	1962.6667
<b>Total</b>		<b>164.23</b>		<b>1313.80</b>	<b>3981.32</b>		<b>204.95</b>	<b>4186.28</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	523.28	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	523.28	in <sup>3</sup>
I <sub>y</sub> =	4186.28	in <sup>4</sup>	S <sub>left</sub> =	523.28	in <sup>3</sup>	I <sub>y</sub> =	4186.28	in <sup>4</sup>	S <sub>left</sub> =	523.28	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	164.2250	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	164.2250	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	5.0489	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	5.0489	in

Non-composite Capacities*		
	AB	AI
M	12471.41 k-ft	12471.41 k-ft
V	736.41 k	736.41 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



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Date 3/27/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.6250$  in  
 $*B_3 = 63.0000$  in

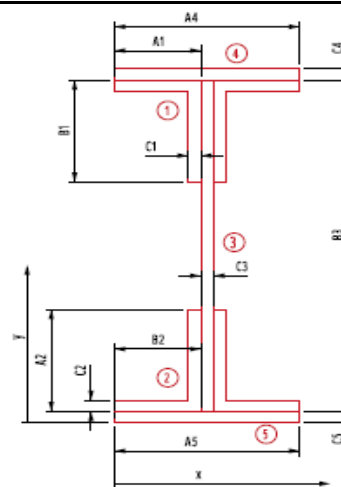
$d_o = 60.0000$  in  
 $d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 2.1250$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 2.1250$  in  
 $A_5 = 16.0000$  in



**Girder 35-36 Section 10**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg		9.0000	64.7500	582.7500	0.4219	31.1250	8718.8906	8719.3125
	Vertical Leg		7.8750	61.7500	486.2813	18.0879	28.1250	6229.2480	6247.3359
2	Horizontal Leg		9.0000	2.5000	22.5000	0.4219	31.1250	8718.8906	8719.3125
	Vertical Leg		7.8750	5.5000	43.3125	18.0879	28.1250	6229.2480	6247.3359
3	Web Plate		39.3750	33.6250	1323.9844	13023.2813	0.0000	0.0000	13023.2813
4	Cover Plate Top		34.0000	66.1875	2250.3750	12.7943	32.5625	36050.7578	36063.5521
	Cover Plate Bottom		34.0000	1.0625	36.1250	12.7943	32.5625	36050.7578	36063.5521
<b>Total</b>			<b>141.13</b>		<b>4745.33</b>	<b>13085.89</b>		<b>101997.79</b>	<b>115083.68</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties				
y-bar =	33.6250 in	S <sub>top</sub> =	3422.56 in <sup>3</sup>		y-bar =	33.6250 in	S <sub>top</sub> =	3422.56 in <sup>3</sup>	
I <sub>x</sub> =	115083.68 in <sup>4</sup>	S <sub>bott.</sub> =	3422.56 in <sup>3</sup>		I <sub>x</sub> =	115083.68 in <sup>4</sup>	S <sub>bott.</sub> =	3422.56 in <sup>3</sup>	
C <sub>top</sub> =	33.6250 in	A =	141.1250 in <sup>2</sup>		C <sub>top</sub> =	33.6250 in	A =	141.1250 in <sup>2</sup>	
C <sub>bottom</sub> =	33.6250 in	r <sub>x</sub> =	28.5565 in		C <sub>bottom</sub> =	33.6250 in	r <sub>x</sub> =	28.5565 in	
J =	113.8092	Z =	3837.6250 in <sup>3</sup>		J =	113.8092	Z =	3837.6250 in <sup>3</sup>	





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Date 3/27/2012  
 Date 4/2/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457
3	Web Plate	39.3750	8.0000	315.0000	1.2817	0.0000	0.0000	1.2817
4	Top Cover Plate	34.0000	8.0000	272.0000	1450.6667	0.0000	0.0000	1450.6667
4	Bottom Cover Plate	34.0000	8.0000	272.0000	1450.6667	0.0000	0.0000	1450.6667
<b>Total</b>		<b>141.13</b>		<b>1129.00</b>	<b>2957.35</b>		<b>204.95</b>	<b>3162.31</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	395.29	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	395.29	in <sup>3</sup>
I <sub>y</sub> =	3162.31	in <sup>4</sup>	S <sub>left</sub> =	395.29	in <sup>3</sup>	I <sub>y</sub> =	3162.31	in <sup>4</sup>	S <sub>left</sub> =	395.29	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	141.1250	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	141.1250	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.7337	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.7337	in

Non-composite Capacities*		
	AB	AI
M	10553.47 k-ft	10553.47 k-ft
V	753.64 k	753.64 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



Made By CTG  
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Date 3/27/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.6250$  in  
 $*B_3 = 64.3200$  in

$d_o = 60.0000$  in

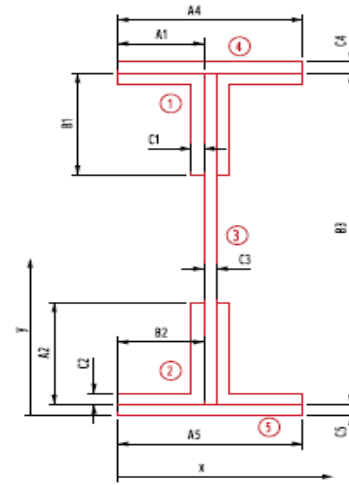
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 1.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 1.5000$  in  
 $A_5 = 16.0000$  in



Girder 35-36 Section 11

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	65.4450	589.0050	0.4219	31.7850	9092.5760	9092.9979
	Vertical Leg	7.8750	62.4450	491.7544	18.0879	28.7850	6525.0378	6543.1257
2	Horizontal Leg	9.0000	1.8750	16.8750	0.4219	31.7850	9092.5760	9092.9979
	Vertical Leg	7.8750	4.8750	38.3906	18.0879	28.7850	6525.0378	6543.1257
3	Web Plate	40.2000	33.6600	1353.1320	13859.1590	0.0000	0.0000	13859.1590
4	Cover Plate Top	24.0000	66.5700	1597.6800	4.5000	32.9100	25993.6344	25998.1344
	Cover Plate Bottom	24.0000	0.7500	18.0000	4.5000	32.9100	25993.6344	25998.1344
<b>Total</b>		<b>121.95</b>		<b>4104.84</b>	<b>13905.18</b>		<b>83222.50</b>	<b>97127.67</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	33.6600 in	S <sub>top</sub> =	2885.55 in <sup>3</sup>	y-bar =	33.6600 in	S <sub>top</sub> =	2885.55 in <sup>3</sup>
I <sub>x</sub> =	97127.67 in <sup>4</sup>	S <sub>bottom</sub> =	2885.55 in <sup>3</sup>	I <sub>x</sub> =	97127.67 in <sup>4</sup>	S <sub>bottom</sub> =	2885.55 in <sup>3</sup>
C <sub>top</sub> =	33.6600 in	A =	121.9500 in <sup>2</sup>	C <sub>top</sub> =	33.6600 in	A =	121.9500 in <sup>2</sup>
C <sub>bottom</sub> =	33.6600 in	r <sub>x</sub> =	28.2215 in	C <sub>bottom</sub> =	33.6600 in	r <sub>x</sub> =	28.2215 in
J =	47.5625	Z =	3251.5898 in <sup>3</sup>	Z =	3251.5898		in <sup>3</sup>



Made By CTG  
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Date 3/27/2012  
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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
3	Web Plate	40.2000	8.0000	321.6000	1.3086	0.0000	0.0000	1.3086	
4	Top Cover Plate	24.0000	8.0000	192.0000	1024.0000	0.0000	0.0000	1024.0000	
4	Bottom Cover Plate	24.0000	8.0000	192.0000	1024.0000	0.0000	0.0000	1024.0000	
<b>Total</b>		<b>121.95</b>		<b>975.60</b>	<b>2104.05</b>		<b>204.95</b>	<b>2309.00</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	288.62	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	288.62	in <sup>3</sup>
I <sub>y</sub> =	2309.00	in <sup>4</sup>	S <sub>left</sub> =	288.62	in <sup>3</sup>	I <sub>y</sub> =	2309.00	in <sup>4</sup>	S <sub>left</sub> =	288.62	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	121.9500	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	121.9500	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.3513	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.3513	in

Non-composite Capacities*		
	AB	AI
M	8941.87 k-ft	8941.87 k-ft
V	769.43 k	769.43 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



Made By CTG  
Checked By DMP

Date 3/27/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.6250$  in  
 $*B_3 = 67.5600$  in

$d_o = 61.5000$  in

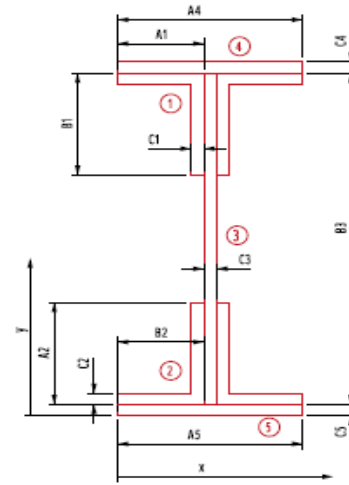
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.7500$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.7500$  in  
 $A_5 = 16.0000$  in



Girder 35-36 Section 12

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	67.9350	611.4150	0.4219	33.4050	10043.0462	10043.4681
	Vertical Leg	7.8750	64.9350	511.3631	18.0879	30.4050	7280.1542	7298.2421
2	Horizontal Leg	9.0000	1.1250	10.1250	0.4219	33.4050	10043.0462	10043.4681
	Vertical Leg	7.8750	4.1250	32.4844	18.0879	30.4050	7280.1542	7298.2421
3	Web Plate	42.2250	34.5300	1458.0293	16060.8192	0.0000	0.0000	16060.8192
4	Cover Plate Top	12.0000	68.6850	824.2200	0.5625	34.1550	13998.7683	13999.3308
	Cover Plate Bottom	12.0000	0.3750	4.5000	0.5625	34.1550	13998.7683	13999.3308
<b>Total</b>		<b>99.98</b>		<b>3452.14</b>	<b>16098.96</b>		<b>62643.94</b>	<b>78742.90</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	34.5300	in	S <sub>top</sub> =	2280.42	in <sup>3</sup>	y-bar =	34.5300	in	S <sub>top</sub> =	2280.42	in <sup>3</sup>
I <sub>x</sub> =	78742.90	n <sup>4</sup>	S <sub>bott.</sub> =	2280.42	in <sup>3</sup>	I <sub>x</sub> =	78742.90	in <sup>4</sup>	S <sub>bott.</sub> =	2280.42	in <sup>3</sup>
C <sub>top</sub> =	34.5300	in	A =	99.9750	in <sup>2</sup>	C <sub>top</sub> =	34.5300	in	A =	99.9750	in <sup>2</sup>
C <sub>bottom</sub> =	34.5300	in	r <sub>x</sub> =	28.0647	in	C <sub>bottom</sub> =	34.5300	in	r <sub>x</sub> =	28.0647	in
J =	16.3262		Z =	2613.0690	in <sup>3</sup>	Z =	2613.0690	in <sup>3</sup>			



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Date 3/27/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
3	Web Plate	42.2250	8.0000	337.8000	1.3745	0.0000	0.0000	1.3745	
4	Top Cover Plate	12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000	
4	Bottom Cover Plate	12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000	
<b>Total</b>		<b>99.98</b>		<b>799.80</b>	<b>1080.11</b>		<b>204.95</b>	<b>1285.06</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	160.63	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	160.63	in <sup>3</sup>
I <sub>y</sub> =	1285.06	in <sup>4</sup>	S <sub>left</sub> =	160.63	in <sup>3</sup>	I <sub>y</sub> =	1285.06	in <sup>4</sup>	S <sub>left</sub> =	160.63	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	99.9750	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	99.9750	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5852	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.5852	in

Non-composite Capacities*		
	AB	AI
M	7185.94 k-ft	7185.94 k-ft
V	808.19 k	808.19 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/27/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.6250$  in  
 $*B_3 = 71.2800$  in

$d_o = 60.0000$  in

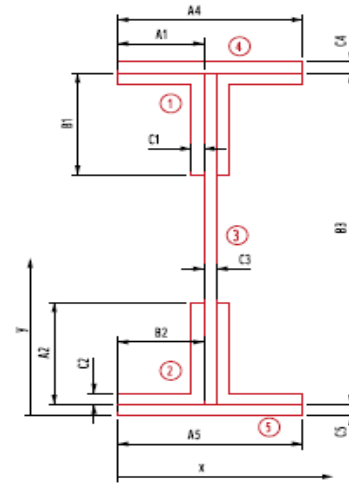
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 1.5000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 1.5000$  in  
 $A_5 = 16.0000$  in



Girder 35-36 Section 13

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	72.4050	651.6450	0.4219	35.2650	11192.5820	11193.0039
	Vertical Leg	7.8750	69.4050	546.5644	18.0879	32.2650	8198.1130	8216.2009
2	Horizontal Leg	9.0000	1.8750	16.8750	0.4219	35.2650	11192.5820	11193.0039
	Vertical Leg	7.8750	4.8750	38.3906	18.0879	32.2650	8198.1130	8216.2009
3	Web Plate	44.5500	37.1400	1654.5870	18862.6126	0.0000	0.0000	18862.6126
4	Cover Plate Top	24.0000	73.5300	1764.7200	4.5000	36.3900	31781.5704	31786.0704
	Cover Plate Bottom	24.0000	0.7500	18.0000	4.5000	36.3900	31781.5704	31786.0704
<b>Total</b>		<b>126.30</b>		<b>4690.78</b>	<b>18908.63</b>		<b>102344.53</b>	<b>121253.16</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	37.1400 in	S <sub>top</sub> =	3264.76 in <sup>3</sup>	y-bar =	37.1400 in	S <sub>top</sub> =	3264.76 in <sup>3</sup>
I <sub>x</sub> =	121253.16 in <sup>4</sup>	S <sub>bott.</sub> =	3264.76 in <sup>3</sup>	I <sub>x</sub> =	121253.16 in <sup>4</sup>	S <sub>bott.</sub> =	3264.76 in <sup>3</sup>
C <sub>top</sub> =	37.1400 in	A =	126.3000 in <sup>2</sup>	C <sub>top</sub> =	37.1400 in	A =	126.3000 in <sup>2</sup>
C <sub>bottom</sub> =	37.1400 in	r <sub>x</sub> =	30.9845 in	C <sub>bottom</sub> =	37.1400 in	r <sub>x</sub> =	30.9845 in
J =	48.1289	Z =	3683.5448 in <sup>3</sup>	Z =	3683.5448 in <sup>3</sup>		



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Date 3/27/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
3	Web Plate	44.5500	8.0000	356.4000	1.4502	0.0000	0.0000	1.4502	
4	Top Cover Plate	24.0000	8.0000	192.0000	1024.0000	0.0000	0.0000	1024.0000	
4	Bottom Cover Plate	24.0000	8.0000	192.0000	1024.0000	0.0000	0.0000	1024.0000	
<b>Total</b>		<b>126.30</b>		<b>1010.40</b>	<b>2104.19</b>		<b>204.95</b>	<b>2309.14</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	288.64	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	288.64	in <sup>3</sup>
I <sub>y</sub> =	2309.14	in <sup>4</sup>	S <sub>left</sub> =	288.64	in <sup>3</sup>	I <sub>y</sub> =	2309.14	in <sup>4</sup>	S <sub>left</sub> =	288.64	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	126.3000	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	126.3000	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.2759	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.2759	in

Non-composite Capacities*		
	AB	AI
M	10129.75 k-ft	10129.75 k-ft
V	852.69 k	852.69 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/27/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.6250$  in  
 $*B_3 = 73.5600$  in

$d_o = 60.0000$  in

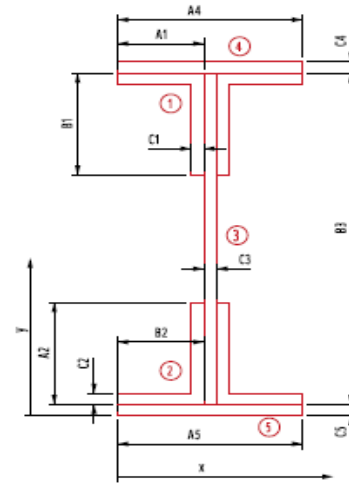
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 2.2500$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 2.2500$  in  
 $A_5 = 16.0000$  in



Girder 35-36 Section 14

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	75.4350	678.9150	0.4219	36.4050	11927.9162	11928.3381
	Vertical Leg	7.8750	72.4350	570.4256	18.0879	33.4050	8787.6654	8805.7533
2	Horizontal Leg	9.0000	2.6250	23.6250	0.4219	36.4050	11927.9162	11928.3381
	Vertical Leg	7.8750	5.6250	44.2969	18.0879	33.4050	8787.6654	8805.7533
3	Web Plate	45.9750	39.0300	1794.4043	20731.1757	0.0000	0.0000	20731.1757
4	Cover Plate Top	36.0000	76.9350	2769.6600	15.1875	37.9050	51724.4049	51739.5924
	Cover Plate Bottom	36.0000	1.1250	40.5000	15.1875	37.9050	51724.4049	51739.5924
<b>Total</b>		<b>151.73</b>		<b>5921.83</b>	<b>20798.57</b>		<b>144879.97</b>	<b>165678.54</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>				<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	39.0300 in	$S_{top} =$	4244.90 in <sup>3</sup>	y-bar =	39.0300 in	$S_{top} =$	4244.90 in <sup>3</sup>
$I_x =$	165678.54 in <sup>4</sup>	$S_{bott.} =$	4244.90 in <sup>3</sup>	$I_x =$	165678.54 in <sup>4</sup>	$S_{bott.} =$	4244.90 in <sup>3</sup>
$C_{top} =$	39.0300 in	A =	151.7250 in <sup>2</sup>	$C_{top} =$	39.0300 in	A =	151.7250 in <sup>2</sup>
$C_{bottom} =$	39.0300 in	$r_x =$	33.0449 in	$C_{bottom} =$	39.0300 in	$r_x =$	33.0449 in
J =	133.8145	Z =	4756.0590 in <sup>3</sup>			Z =	4756.0590 in <sup>3</sup>





Made By CTG  
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Date 3/27/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
3	Web Plate	45.9750	8.0000	367.8000	1.4966	0.0000	0.0000	1.4966	
4	Top Cover Plate	36.0000	8.0000	288.0000	1536.0000	0.0000	0.0000	1536.0000	
4	Bottom Cover Plate	36.0000	8.0000	288.0000	1536.0000	0.0000	0.0000	1536.0000	
<b>Total</b>		<b>151.73</b>		<b>1213.80</b>	<b>3128.23</b>		<b>204.95</b>	<b>3333.19</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	8.0000 in	S <sub>right</sub> =	416.65 in <sup>3</sup>	x-bar =	8.0000 in	S <sub>right</sub> =	416.65 in <sup>3</sup>
I <sub>y</sub> =	3333.19 in <sup>4</sup>	S <sub>left</sub> =	416.65 in <sup>3</sup>	I <sub>y</sub> =	3333.19 in <sup>4</sup>	S <sub>left</sub> =	416.65 in <sup>3</sup>
C <sub>right</sub> =	8.0000 in	A =	151.7250 in <sup>2</sup>	C <sub>right</sub> =	8.0000 in	A =	151.7250 in <sup>2</sup>
C <sub>left</sub> =	8.0000 in	r <sub>y</sub> =	4.6871 in	C <sub>left</sub> =	8.0000 in	r <sub>y</sub> =	4.6871 in

Non-composite Capacities*		
	AB	AI
M	13079.16 k-ft	13079.16 k-ft
V	879.96 k	879.96 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Checked By DMP

Date 3/27/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.6250$  in  
 $*B_3 = 76.2000$  in  
 $d_0 = 48.0000$  in

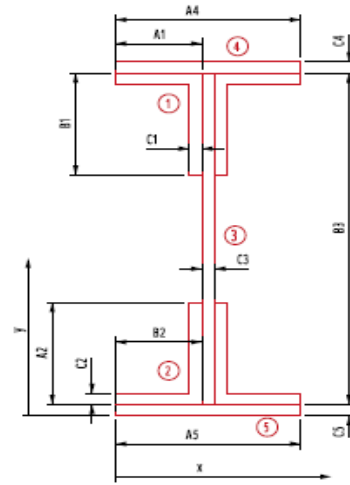
$d_0 =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 3.0000$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 3.0000$  in  
 $A_5 = 16.0000$  in



Girder 35-36 Section 15

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_0$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	78.8250	709.4250	0.4219	37.7250	12808.5806	12809.0025
	Vertical Leg	7.8750	75.8250	597.1219	18.0879	34.7250	9495.8768	9513.9647
2	Horizontal Leg	9.0000	3.3750	30.3750	0.4219	37.7250	12808.5806	12809.0025
	Vertical Leg	7.8750	6.3750	50.2031	18.0879	34.7250	9495.8768	9513.9647
3	Web Plate	47.6250	41.1000	1957.3875	23044.3088	0.0000	0.0000	23044.3088
4	Cover Plate Top	48.0000	80.7000	3873.6000	36.0000	39.6000	75271.6800	75307.6800
	Cover Plate Bottom	48.0000	1.5000	72.0000	36.0000	39.6000	75271.6800	75307.6800
Total		177.38		7290.11	23153.33		195152.27	218305.60
Section Losses		A	y	Ay	$I_0$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total			0.00	0.00	0.00		0.00	0.00

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	41.1000	in	$S_{top} = 5311.57$	in <sup>3</sup>	y-bar =	41.1000	in	$S_{top} = 5311.57$	in <sup>3</sup>		
$I_x =$	218305.60	in <sup>4</sup>	$S_{bott.} = 5311.57$	in <sup>3</sup>	$I_x =$	218305.60	in <sup>4</sup>	$S_{bott.} = 5311.57$	in <sup>3</sup>		
$C_{top} =$	41.1000	in	A =	177.3750	in <sup>2</sup>	$C_{top} =$	41.1000	in	A =	177.3750	in <sup>2</sup>
$C_{bottom} =$	41.1000	in	$r_x =$	35.0822	in	$C_{bottom} =$	41.1000	in	$r_x =$	35.0822	in
J =	300.5293		Z =	5934.8250	in <sup>3</sup>	Z =	5934.8250	in <sup>3</sup>			



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Date 3/27/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
3	Web Plate	47.6250	8.0000	381.0000	1.5503	0.0000	0.0000	1.5503	
4	Top Cover Plate	48.0000	8.0000	384.0000	2048.0000	0.0000	0.0000	2048.0000	
4	Bottom Cover Plate	48.0000	8.0000	384.0000	2048.0000	0.0000	0.0000	2048.0000	
<b>Total</b>		<b>177.38</b>		<b>1419.00</b>	<b>4152.29</b>		<b>204.95</b>	<b>4357.24</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	544.66	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	544.66	in <sup>3</sup>
I <sub>y</sub> =	4357.24	in <sup>4</sup>	S <sub>left</sub> =	544.66	in <sup>3</sup>	I <sub>y</sub> =	4357.24	in <sup>4</sup>	S <sub>left</sub> =	544.66	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	177.3750	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	177.3750	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.9563	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.9563	in

Non-composite Capacities*		
	AB	AI
M	16320.77 k-ft	16320.77 k-ft
V	911.54 k	911.54 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



Made By CTG  
Checked By DMP

Date 3/26/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.6250$  in  
 $*B_3 = 73.9200$  in

$d_o = 63.0000$  in

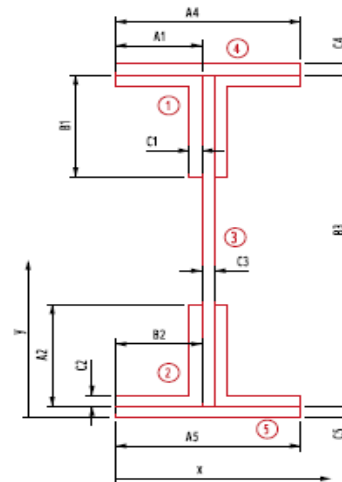
$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 2.2500$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 2.2500$  in  
 $A_5 = 16.0000$  in



**Girder 36-37 Section 1**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg		9.0000	75.7950	682.1550	0.4219	36.5850	12046.1600	12046.5819
	Vertical Leg		7.8750	72.7950	573.2606	18.0879	33.5850	8882.6238	8900.7117
2	Horizontal Leg		9.0000	2.6250	23.6250	0.4219	36.5850	12046.1600	12046.5819
	Vertical Leg		7.8750	5.6250	44.2969	18.0879	33.5850	8882.6238	8900.7117
3	Web Plate		46.2000	39.2100	1811.5020	21037.0406	0.0000	0.0000	21037.0406
4	Cover Plate Top		36.0000	77.2950	2782.6200	15.1875	38.0850	52216.8201	52232.0076
	Cover Plate Bottom		36.0000	1.1250	40.5000	15.1875	38.0850	52216.8201	52232.0076
<b>Total</b>			<b>151.95</b>		<b>5957.96</b>	<b>21104.44</b>		<b>146291.21</b>	<b>167395.64</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
y-bar =	39.2100	in	S <sub>top</sub> =	4269.21	in <sup>3</sup>	y-bar =	39.2100	in	S <sub>top</sub> =	4269.21	in <sup>3</sup>
I <sub>x</sub> =	167395.64	in <sup>4</sup>	S <sub>bott.</sub> =	4269.21	in <sup>3</sup>	I <sub>x</sub> =	167395.64	in <sup>4</sup>	S <sub>bott.</sub> =	4269.21	in <sup>3</sup>
C <sub>top</sub> =	39.2100	in	A =	151.9500	in <sup>2</sup>	C <sub>top</sub> =	39.2100	in	A =	151.9500	in <sup>2</sup>
C <sub>bottom</sub> =	39.2100	in	r <sub>x</sub> =	33.1911	in	C <sub>bottom</sub> =	39.2100	in	r <sub>x</sub> =	33.1911	in
J =	133.8438		Z =	4783.3898	in <sup>3</sup>	J =	133.8438		Z =	4783.3898	in <sup>3</sup>



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Date 3/26/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
3	Web Plate	46.2000	8.0000	369.6000	1.5039	0.0000	0.0000	1.5039	
4	Top Cover Plate	36.0000	8.0000	288.0000	1536.0000	0.0000	0.0000	1536.0000	
4	Bottom Cover Plate	36.0000	8.0000	288.0000	1536.0000	0.0000	0.0000	1536.0000	
<b>Total</b>		<b>151.95</b>		<b>1215.60</b>	<b>3128.24</b>		<b>204.95</b>	<b>3333.19</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	416.65	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	416.65	in <sup>3</sup>
I <sub>y</sub> =	3333.19	in <sup>4</sup>	S <sub>left</sub> =	416.65	in <sup>3</sup>	I <sub>y</sub> =	3333.19	in <sup>4</sup>	S <sub>left</sub> =	416.65	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	151.9500	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	151.9500	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.6836	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.6836	in

Non-composite Capacities*		
	AB	AI
M	13154.32 k-ft	13154.32 k-ft
V	884.27 k	884.27 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

- A<sub>1</sub> = l<sub>w</sub> = **6.0000** in
- C<sub>1</sub> = t<sub>f</sub> = **0.7500** in
- B<sub>1</sub> = l<sub>v</sub> = **6.0000** in

Bottom Angles:

- B<sub>2</sub> = l<sub>h</sub> = **6.0000** in
- C<sub>2</sub> = t<sub>f</sub> = **0.7500** in
- A<sub>2</sub> = l<sub>v</sub> = **6.0000** in

Web Plate:

- C<sub>3</sub> = **0.6250** in
- \*B<sub>3</sub> = **69.4800** in

- d<sub>0</sub> = **63.0000** in

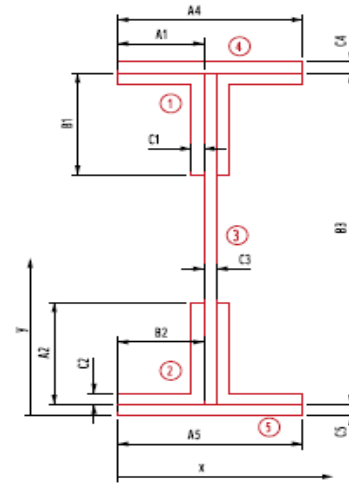
d<sub>0</sub> = stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

- C<sub>4</sub> = **1.5000** in
- A<sub>4</sub> = **16.0000** in

Btm Cover Plate:

- C<sub>5</sub> = **1.5000** in
- A<sub>5</sub> = **16.0000** in



**Girder 36-37 Section 2**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)			A	y	Ay	I <sub>0</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg		9.0000	70.6050	635.4450	0.4219	34.3650	10628.5790	10629.0009
	Vertical Leg		7.8750	67.6050	532.3894	18.0879	31.3650	7747.1354	7765.2233
2	Horizontal Leg		9.0000	1.8750	16.8750	0.4219	34.3650	10628.5790	10629.0009
	Vertical Leg		7.8750	4.8750	38.3906	18.0879	31.3650	7747.1354	7765.2233
3	Web Plate		43.4250	36.2400	1573.7220	17469.4085	0.0000	0.0000	17469.4085
4	Cover Plate Top		24.0000	71.7300	1721.5200	4.5000	35.4900	30228.9624	30233.4624
	Cover Plate Bottom		24.0000	0.7500	18.0000	4.5000	35.4900	30228.9624	30233.4624
<b>Total</b>			<b>125.18</b>		<b>4536.34</b>	<b>17515.43</b>		<b>97209.35</b>	<b>114724.78</b>
Section Losses			A	y	Ay	I <sub>0</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	36.2400 in	S <sub>top</sub> =	3165.69 in <sup>3</sup>	y-bar =	36.2400 in	S <sub>top</sub> =	3165.69 in <sup>3</sup>
I <sub>x</sub> =	114724.78 in <sup>4</sup>	S <sub>bott.</sub> =	3165.69 in <sup>3</sup>	I <sub>x</sub> =	114724.78 in <sup>4</sup>	S <sub>bott.</sub> =	3165.69 in <sup>3</sup>
C <sub>top</sub> =	36.2400 in	A =	125.1750 in <sup>2</sup>	C <sub>top</sub> =	36.2400 in	A =	125.1750 in <sup>2</sup>
C <sub>bottom</sub> =	36.2400 in	r <sub>x</sub> =	30.2740 in	C <sub>bottom</sub> =	36.2400 in	r <sub>x</sub> =	30.2740 in
J =	47.9824	Z =	3570.3810 in <sup>3</sup>	Z =	<b>3570.3810</b>		in <sup>3</sup>



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Date 3/26/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
3	Web Plate	43.4250	8.0000	347.4000	1.4136	0.0000	0.0000	1.4136	
4	Top Cover Plate	24.0000	8.0000	192.0000	1024.0000	0.0000	0.0000	1024.0000	
4	Bottom Cover Plate	24.0000	8.0000	192.0000	1024.0000	0.0000	0.0000	1024.0000	
<b>Total</b>		<b>125.18</b>		<b>1001.40</b>	<b>2104.15</b>		<b>204.95</b>	<b>2309.10</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	288.64	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	288.64	in <sup>3</sup>
I <sub>y</sub> =	2309.10	in <sup>4</sup>	S <sub>left</sub> =	288.64	in <sup>3</sup>	I <sub>y</sub> =	2309.10	in <sup>4</sup>	S <sub>left</sub> =	288.64	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	125.1750	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	125.1750	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.2950	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	4.2950	in

Non-composite Capacities*		
	AB	AI
M	9818.55 k-ft	9818.55 k-ft
V	831.15 k	831.15 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
------------------	-----------

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



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Date 3/26/2012  
 Date 4/2/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.6250$  in  
 $*B_3 = 65.0400$  in

$d_0 = 63.0000$  in

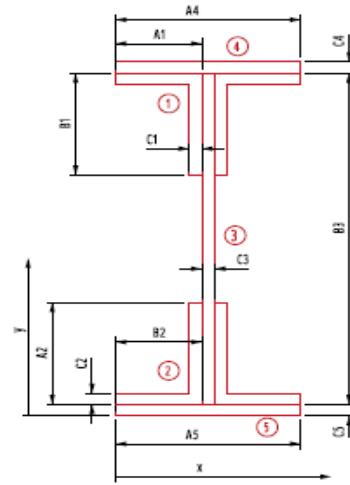
$d_0 =$  stiffener spacing for shear check  
 Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.7500$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.7500$  in  
 $A_5 = 16.0000$  in



**Girder 36-37 Section 3**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>0</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	65.4150	588.7350	0.4219	32.1450	9299.7092	9300.1311
	Vertical Leg	7.8750	62.4150	491.5181	18.0879	29.1450	6689.2693	6707.3572
2	Horizontal Leg	9.0000	1.1250	10.1250	0.4219	32.1450	9299.7092	9300.1311
	Vertical Leg	7.8750	4.1250	32.4844	18.0879	29.1450	6689.2693	6707.3572
3	Web Plate	40.6500	33.2700	1352.4255	14329.8079	0.0000	0.0000	14329.8079
4	Cover Plate Top	12.0000	66.1650	793.9800	0.5625	32.8950	12984.9723	12985.5348
	Cover Plate Bottom	12.0000	0.3750	4.5000	0.5625	32.8950	12984.9723	12985.5348
<b>Total</b>		<b>98.40</b>		<b>3273.77</b>	<b>14367.95</b>		<b>57947.90</b>	<b>72315.85</b>
Section Losses		A	y	Ay	I <sub>0</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	33.2700 in	S <sub>top</sub> =	2173.61 in <sup>3</sup>	y-bar =	33.2700 in	S <sub>top</sub> =	2173.61 in <sup>3</sup>
I <sub>x</sub> =	72315.85 in <sup>4</sup>	S <sub>bottom</sub> =	2173.61 in <sup>3</sup>	I <sub>x</sub> =	72315.85 in <sup>4</sup>	S <sub>bottom</sub> =	2173.61 in <sup>3</sup>
C <sub>top</sub> =	33.2700 in	A =	98.4000 in <sup>2</sup>	C <sub>top</sub> =	33.2700 in	A =	98.4000 in <sup>2</sup>
C <sub>bottom</sub> =	33.2700 in	r <sub>x</sub> =	27.1094 in	C <sub>bottom</sub> =	33.2700 in	r <sub>x</sub> =	27.1094 in
J =	16.1211	Z =	2488.0928 in <sup>3</sup>	Z =	2488.0928 in <sup>3</sup>		





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Date 3/26/2012  
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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
3	Web Plate	40.6500	8.0000	325.2000	1.3232	0.0000	0.0000	1.3232	
4	Top Cover Plate	12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000	
4	Bottom Cover Plate	12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000	
<b>Total</b>		<b>98.40</b>		<b>787.20</b>	<b>1080.06</b>		<b>204.95</b>	<b>1285.01</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	160.63	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	160.63	in <sup>3</sup>
I <sub>y</sub> =	1285.01	in <sup>4</sup>	S <sub>left</sub> =	160.63	in <sup>3</sup>	I <sub>y</sub> =	1285.01	in <sup>4</sup>	S <sub>left</sub> =	160.63	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	98.4000	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	98.4000	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.6137	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.6137	in

Non-composite Capacities*		
	AB	AI
M	6842.26 k-ft	6842.26 k-ft
V	778.04 k	778.04 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



Made By CTG  
Checked By DMP

Date 3/26/2012  
Date 4/2/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 6.0000$  in

Web Plate:

$C_3 = 0.6250$  in  
 $*B_3 = 60.8400$  in

$d_o = 65.0000$  in

$d_o =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Top Cover Plate:

$C_4 = 0.7500$  in  
 $A_4 = 16.0000$  in

Btm Cover Plate:

$C_5 = 0.7500$  in  
 $A_5 = 16.0000$  in



Girder 36-37 Section 4

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	9.0000	61.2150	550.9350	0.4219	30.0450	8124.3182	8124.7401
	Vertical Leg	7.8750	58.2150	458.4431	18.0879	27.0450	5760.0272	5778.1151
2	Horizontal Leg	9.0000	1.1250	10.1250	0.4219	30.0450	8124.3182	8124.7401
	Vertical Leg	7.8750	4.1250	32.4844	18.0879	27.0450	5760.0272	5778.1151
3	Web Plate	38.0250	31.1700	1185.2393	11729.1459	0.0000	0.0000	11729.1459
4	Cover Plate Top	12.0000	61.9650	743.5800	0.5625	30.7950	11379.9843	11380.5468
	Cover Plate Bottom	12.0000	0.3750	4.5000	0.5625	30.7950	11379.9843	11380.5468
<b>Total</b>		<b>95.78</b>		<b>2985.31</b>	<b>11767.29</b>		<b>50528.66</b>	<b>62295.95</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	31.1700 in	S <sub>top</sub> =	1998.59 in <sup>3</sup>	y-bar =	31.1700 in	S <sub>top</sub> =	1998.59 in <sup>3</sup>
I <sub>x</sub> =	62295.95 in <sup>4</sup>	S <sub>bott.</sub> =	1998.59 in <sup>3</sup>	I <sub>x</sub> =	62295.95 in <sup>4</sup>	S <sub>bott.</sub> =	1998.59 in <sup>3</sup>
C <sub>top</sub> =	31.1700 in	A =	95.7750 in <sup>2</sup>	C <sub>top</sub> =	31.1700 in	A =	95.7750 in <sup>2</sup>
C <sub>bottom</sub> =	31.1700 in	r <sub>x</sub> =	25.5037 in	C <sub>bottom</sub> =	31.1700 in	r <sub>x</sub> =	25.5037 in
J =	15.7793	Z =	2284.2090 in <sup>3</sup>	Z =	2284.2090		in <sup>3</sup>



Made By CTG  
 Checked By DMP

Date 3/26/2012  
 Date 4/2/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
1 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
2 (Left)	Horizontal Leg	4.5000	4.6875	21.0938	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	7.3125	28.7930	0.1846	0.6875	1.8611	2.0457	
2 (Right)	Horizontal Leg	4.5000	11.3125	50.9063	13.5000	3.3125	49.3770	62.8770	
	Vertical Leg	3.9375	8.6875	34.2070	0.1846	0.6875	1.8611	2.0457	
3	Web Plate	38.0250	8.0000	304.2000	1.2378	0.0000	0.0000	1.2378	
4	Top Cover Plate	12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000	
4	Bottom Cover Plate	12.0000	8.0000	96.0000	512.0000	0.0000	0.0000	512.0000	
<b>Total</b>		<b>95.78</b>		<b>766.20</b>	<b>1079.98</b>		<b>204.95</b>	<b>1284.93</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	8.0000	in	S <sub>right</sub> =	160.62	in <sup>3</sup>	x-bar =	8.0000	in	S <sub>right</sub> =	160.62	in <sup>3</sup>
I <sub>y</sub> =	1284.93	in <sup>4</sup>	S <sub>left</sub> =	160.62	in <sup>3</sup>	I <sub>y</sub> =	1284.93	in <sup>4</sup>	S <sub>left</sub> =	160.62	in <sup>3</sup>
C <sub>right</sub> =	8.0000	in	A =	95.7750	in <sup>2</sup>	C <sub>right</sub> =	8.0000	in	A =	95.7750	in <sup>2</sup>
C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.6628	in	C <sub>left</sub> =	8.0000	in	r <sub>y</sub> =	3.6628	in

Non-composite Capacities*		
	AB	AI
M	6281.57 k-ft	6281.57 k-ft
V	727.80 k	727.80 k

\*Compact Section

F<sub>y</sub> = **33.00 ksi**

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



# COLUMN RATING





Made By: GHD  
 Checked By: CTG

Date: 4/10/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					$\frac{P}{P_u} + \frac{MC}{M_u \left(1 - \frac{P}{A_s F_c}\right)} \leq 1.0$ Rating Factor			
			Dead Load			HS20 (Max P)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			IMPACT	Condition Equation
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips				
14N	Top	1493	129.11	13.37	437.53	134.26	22.67	215.25	2135.80	5807.40	15091.10	183481.77	69018.60	1.27	1.00	3.92	6.55
	Bottom	1493	132.1	4.35	159.87	134.26	23.42	84.25	2135.80	5807.40	15091.10	183481.77	69018.60	1.27	1.00	4.52	7.54
15N	Top	1495	181.85	2.99	421.78	146.32	28.13	0.00	1876.90	5258.80	11036.20	116218.33	77375.32	1.29	1.00	3.54	5.91
	Bottom	1701	185.03	3.8	215.55	146.32	27.12	40.94	1876.90	5258.80	11036.20	116218.33	77375.32	1.29	1.00	3.48	5.82
16N	Top	1497	222.8	10.55	290.01	163.82	31.40	126.15	1876.40	5258.80	11036.20	112015.10	74576.91	1.29	1.00	2.75	4.59
	Bottom	1703	226.03	1.25	108.23	163.82	29.06	58.45	1876.40	5258.80	11036.20	112015.10	74576.91	1.29	1.00	3.02	5.04
17N	Top	1499	171.07	17.61	426.06	139.91	31.44	0.00	1873.80	5258.80	11036.20	94713.82	63058.14	1.29	1.00	3.65	6.10
	Bottom	1705	174.8	12.91	203.46	139.91	23.37	42.19	1873.80	5258.80	11036.20	94713.82	63058.14	1.29	1.00	3.66	6.11
18N	Top	1501	199.29	1.69	171.13	142.55	35.44	93.09	1651.50	4376.30	10124.90	84953.56	52304.90	1.29	1.00	2.83	4.72
	Bottom	1707	202.56	0.06	68.13	142.55	24.14	42.97	1651.50	4376.30	10124.90	84953.56	52304.90	1.29	1.00	3.10	5.17
19N	Top	1503	211.59	10.59	185.03	147.74	32.35	0.00	1650.40	4376.30	10124.90	79352.66	48856.49	1.29	1.00	2.98	4.97
	Bottom	1709	215.21	8.7	96.02	147.74	24.01	26.04	1650.40	4376.30	10124.90	79352.66	48856.49	1.29	1.00	2.99	4.99
20N	Top	1505	183.75	49.06	435.19	149.48	0.00	196.07	2349.90	6465.40	15025.20	85984.74	50309.76	1.28	1.00	3.96	6.62
	Bottom	1505	189.82	0	0	149.48	25.23	0.00	2349.90	6465.40	15025.20	85984.74	50309.76	1.28	1.00	4.77	7.96
21N	Top	1507	372.95	55.44	36.51	151.12	96.26	4.78	2278.20	5791.70	14821.40	128698.63	69474.54	1.26	1.00	3.39	5.66
	Bottom	1507	377.77	27.53	29.74	151.12	58.81	18.17	2278.20	5791.70	14821.40	128698.63	69474.54	1.26	1.00	3.65	6.10
22N	Top	1509	300.78	113.72	111.65	157.96	56.60	27.53	2134.60	6038.60	12978.30	88759.06	56897.31	1.27	1.00	3.30	5.51
	Bottom	1509	305.69	26.32	71.96	157.96	12.18	45.13	2134.60	6038.60	12978.30	88759.06	56897.31	1.27	1.00	3.65	6.09
23N	Top	1511	104.65	2.86	41.58	137.74	0.00	0.00	1634.10	4376.30	10124.90	40198.84	24749.95	1.30	1.00	3.84	6.42
	Bottom	1511	108.67	0	0	137.74	7.54	60.02	1634.10	4376.30	10124.90	40198.84	24749.95	1.30	1.00	3.52	5.88
24N	Top	1513	203.13	16.61	52.8	155.65	5.33	23.96	1707.60	6550.20	10846.40	49478.05	32080.12	1.29	1.00	3.16	5.28
	Bottom	1513	207.56	1.75	22.77	155.65	28.64	16.31	1707.60	6550.20	10846.40	49478.05	32080.12	1.29	1.00	3.08	5.15
25N	Top	1515	209.86	18.58	68.68	164.51	23.41	17.46	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	2.90	4.84
	Bottom	1515	214.33	13.96	39	164.51	17.65	42.46	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	2.86	4.78
26N	Top	1517	120.4	87.54	285.14	143.18	0.00	83.76	2166.10	5820.10	13949.00	53573.69	30632.52	1.29	1.00	4.35	7.26
	Bottom	1517	127.62	0	0	143.18	37.50	0.00	2166.10	5820.10	13949.00	53573.69	30632.52	1.29	1.00	4.55	7.60
27N	Top	1519	231.3	101.15	160.65	157.96	65.10	0.00	1959.60	5390.00	11910.80	63775.61	40064.05	1.29	1.00	3.10	5.17
	Bottom	1711	236.59	57.22	75	157.96	36.79	11.77	1959.60	5390.00	11910.80	63775.61	40064.05	1.29	1.00	3.32	5.54
28N	Top	1521	232.66	43.13	189.1	158.33	27.10	97.85	1961.00	5390.00	11910.80	66899.22	42026.32	1.29	1.00	3.09	5.16
	Bottom	1713	237.85	24.35	79.31	158.33	15.70	48.78	1961.00	5390.00	11910.80	66899.22	42026.32	1.29	1.00	3.37	5.63
29N	Top	1523	194.15	129.59	241.85	143.21	29.71	0.00	2063.80	5606.10	12927.50	58454.03	34974.38	1.29	1.00	3.93	6.57
	Bottom	1523	200.32	0	0	143.21	0.00	37.58	2063.80	5606.10	12927.50	58454.03	34974.38	1.29	1.00	4.32	7.22



Made By: GHD  
Checked By: CTG

Date: 4/10/2012  
Date: 4/13/2012

Job No.: P402110046  
Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					$\frac{P}{P_u} + \frac{MC}{M_u \left(1 - \frac{P}{A_s F_c}\right)} \leq 1.0$ Rating Factor			
			Dead Load			HS20 (Max P)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			IMPACT	Condition Equation
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips				
30N	Top	1525	261.42	57.7	116.49	148.66	3.83	69.96	1797.90	4896.30	11154.20	68492.86	42535.26	1.28	1.00	3.12	5.22
	Bottom	1525	265.73	26.48	46.58	148.66	6.38	39.65	1797.90	4896.30	11154.20	68492.86	42535.26	1.28	1.00	3.26	5.45
31N	Top	1527	261.87	94.44	135.17	146.29	46.75	0.00	1799.50	4896.30	11154.20	73706.03	45772.73	1.28	1.00	3.04	5.08
	Bottom	1527	266.05	60.56	66.18	146.29	30.26	6.67	1799.50	4896.30	11154.20	73706.03	45772.73	1.28	1.00	3.20	5.34
32N	Top	1529	225.84	282.11	524.59	148.30	0.00	171.39	2356.50	6465.40	15025.20	107045.31	62632.32	1.27	1.00	3.75	6.26
	Bottom	1715	232.56	136.23	185.22	148.30	13.04	65.59	2356.50	6465.40	15025.20	107045.31	62632.32	1.27	1.00	4.32	7.21
33N	Top	1531	379.21	184.85	128.61	167.21	62.80	19.57	2361.80	6465.40	15025.20	133600.12	78169.57	1.27	1.00	3.30	5.51
	Bottom	1531	384.33	76.26	80.69	167.21	24.96	33.40	2361.80	6465.40	15025.20	133600.12	78169.57	1.27	1.00	3.62	6.05
34N	Top	1533	131.26	14	14.77	138.47	35.21	0.16	1534.00	4157.90	9123.20	52023.88	33933.53	1.28	1.00	3.21	5.36
	Bottom	1533	135.17	4.53	12.21	138.47	25.47	8.69	1534.00	4157.90	9123.20	52023.88	33933.53	1.28	1.00	3.26	5.44
35N	Top	1535	511.09	129.11	300.23	172.89	0.00	103.43	3478.90	8893.90	25654.00	113183.93	49191.86	1.24	1.00	5.34	8.92
	Bottom	1535	521.9	0	0	172.89	73.59	0.00	3478.90	8893.90	25654.00	113183.93	49191.86	1.24	1.00	5.16	8.62
36N	Top	1537	495.35	270.55	260.94	189.28	185.66	0.00	3521.30	8893.90	25654.00	257873.87	112076.82	1.25	1.00	3.76	6.28
	Bottom	1537	506.16	0	0	189.28	0.00	115.55	3521.30	8893.90	25654.00	257873.87	112076.82	1.25	1.00	5.13	8.57
14S	Top	1494	116.09	10.88	385.88	128.12	33.29	200.79	2135.60	5807.40	15091.10	181009.38	68088.58	1.27	1.00	4.08	6.81
	Bottom	1494	119.09	7.4	140.37	128.12	49.73	77.62	2135.60	5807.40	15091.10	181009.38	68088.58	1.27	1.00	4.48	7.49
15S	Top	1496	160.38	3.92	370.27	139.62	0.00	0.00	1876.40	5258.80	11036.20	111596.94	74298.51	1.29	1.00	4.06	6.79
	Bottom	1702	163.63	3.13	189.61	139.62	14.99	39.25	1876.40	5258.80	11036.20	111596.94	74298.51	1.29	1.00	3.82	6.39
16S	Top	1498	205.01	1.11	263.82	158.30	0.00	118.03	1875.30	5258.80	11036.20	103983.04	69229.36	1.29	1.00	3.11	5.19
	Bottom	1704	208.35	6.22	100.38	158.30	18.59	54.56	1875.30	5258.80	11036.20	103983.04	69229.36	1.29	1.00	3.24	5.42
17S	Top	1500	149.75	15.08	374.44	145.49	0.00	0.00	1871.40	5258.80	11036.20	82440.03	54886.55	1.29	1.00	3.91	6.52
	Bottom	1706	153.7	2.93	179.58	145.49	7.19	50.74	1871.40	5258.80	11036.20	82440.03	54886.55	1.29	1.00	3.72	6.22
18S	Top	1502	184.51	14.84	153.58	157.98	1.40	87.65	1649.00	4376.30	10124.90	73112.04	45014.22	1.29	1.00	2.83	4.73
	Bottom	1708	187.99	6.51	63.06	157.98	0.00	39.80	1649.00	4376.30	10124.90	73112.04	45014.22	1.29	1.00	3.02	5.05
19S	Top	1504	195.09	2.18	166.59	156.92	0.00	0.00	1647.80	4376.30	10124.90	68624.16	42251.08	1.29	1.00	3.10	5.18
	Bottom	1710	198.94	2.13	85.64	156.92	0.90	36.24	1647.80	4376.30	10124.90	68624.16	42251.08	1.29	1.00	3.01	5.02
20S	Top	1506	165.32	93.06	516.07	147.67	0.00	198.89	2173.60	6411.00	13022.80	61419.65	41623.62	1.28	1.00	3.57	5.96
	Bottom	1506	171.7	0	0	147.67	77.99	0.00	2173.60	6411.00	13022.80	61419.65	41623.62	1.28	1.00	4.03	6.73
21S	Top	1508	282.96	5.36	211.45	186.47	56.98	35.15	2621.60	7258.20	17136.00	103760.01	58906.39	1.27	1.00	3.77	6.30
	Bottom	1508	289.48	2.89	109.33	186.47	0.53	63.58	2621.60	7258.20	17136.00	103760.01	58906.39	1.27	1.00	4.11	6.87
22S	Top	1510	282.09	144.25	318.81	184.88	27.66	141.74	2734.80	7465.90	18178.40	120621.95	65891.76	1.27	1.00	3.74	6.25
	Bottom	1510	288.66	47.23	162.26	184.88	10.00	59.12	2734.80	7465.90	18178.40	120621.95	65891.76	1.27	1.00	4.24	7.08



Made By: GHD  
Checked By: CTG

Date: 4/10/2012  
Date: 4/13/2012

Job No.: P402110046  
Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					$\frac{P}{P_u} + \frac{MC}{M_u \left(1 - \frac{P}{A_s F_c}\right)} \leq 1.0$		Rating Factor	
Column	Location	STAAD Beam	Dead Load			HS20 (Max P)			P <sub>u</sub> kips	M <sub>uy</sub> k-ft	M <sub>uz</sub> k-ft	A <sub>s</sub> F <sub>ey</sub> kips	A <sub>s</sub> F <sub>ez</sub> kips	IMPACT	Condition Equation	Inv.	Opr.
			P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)									
23S	Top	1512	119.85	95.65	625.15	133.78	0.00	0.00	2818.40	7672.50	19226.80	73711.90	38813.92	1.28	1.00	6.72	11.22
	Bottom	1512	129	0	0	133.78	36.28	213.81	2818.40	7672.50	19226.80	73711.90	38813.92	1.28	1.00	5.30	8.86
24S	Top	1514	177.76	19.75	46.14	158.48	36.99	10.24	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	3.06	5.11
	Bottom	1514	182.39	4.2	23.57	158.48	68.10	4.05	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	2.94	4.91
25S	Top	1516	173.51	1.43	80	144.23	12.43	25.64	1704.20	6550.20	10846.40	44067.05	28571.79	1.29	1.00	3.44	5.74
	Bottom	1516	178.18	4.73	39.84	144.23	20.54	49.60	1704.20	6550.20	10846.40	44067.05	28571.79	1.29	1.00	3.31	5.52
26S	Top	1518	135.33	120.24	245.35	137.41	0.00	60.97	2162.40	5820.10	13949.00	49673.65	28402.55	1.28	1.00	4.57	7.63
	Bottom	1518	142.8	0	0	137.41	79.01	0.00	2162.40	5820.10	13949.00	49673.65	28402.55	1.28	1.00	4.24	7.08
27S	Top	1520	216.4	48.11	194.5	180.69	21.69	0.00	1959.00	5390.00	11910.80	62461.78	39238.70	1.28	1.00	3.07	5.13
	Bottom	1712	221.73	29.6	85.42	180.69	6.66	39.36	1959.00	5390.00	11910.80	62461.78	39238.70	1.28	1.00	3.10	5.18
28S	Top	1522	218.96	101.84	156.84	185.72	0.00	67.72	1960.40	5390.00	11910.80	65488.22	41139.92	1.28	1.00	2.90	4.85
	Bottom	1714	224.19	54.69	70.48	185.72	6.06	25.19	1960.40	5390.00	11910.80	65488.22	41139.92	1.28	1.00	3.04	5.08
29S	Top	1524	158.65	107.95	263.55	146.13	0.00	0.00	2065.70	5606.10	12927.50	61732.28	36935.84	1.28	1.00	4.31	7.19
	Bottom	1524	164.69	0	0	146.13	3.63	86.69	2065.70	5606.10	12927.50	61732.28	36935.84	1.28	1.00	4.11	6.87
30S	Top	1526	240.32	79.03	115.07	165.42	20.31	58.96	1800.70	4896.30	11154.20	78305.20	48628.90	1.28	1.00	2.80	4.68
	Bottom	1526	244.39	40.1	51.65	165.42	24.14	19.27	1800.70	4896.30	11154.20	78305.20	48628.90	1.28	1.00	2.94	4.91
31S	Top	1528	241.39	73.07	130.24	149.37	7.78	36.70	1800.80	4896.30	11154.20	78427.17	48704.65	1.28	1.00	3.23	5.40
	Bottom	1528	245.46	46.95	55.51	149.37	5.95	63.05	1800.80	4896.30	11154.20	78427.17	48704.65	1.28	1.00	3.21	5.36
32S	Top	1530	130.23	70.87	25.89	131.10	46.08	7.03	1537.70	4157.90	9123.20	63164.35	41200.11	1.29	1.00	3.18	5.31
	Bottom	1530	133.84	47.56	5.65	131.10	77.02	0.00	1537.70	4157.90	9123.20	63164.35	41200.11	1.29	1.00	3.00	5.01
33S	Top	1532	334.39	105.09	1.34	157.92	11.68	0.00	1536.50	4157.90	9123.20	59113.10	38557.61	1.26	1.00	2.36	3.95
	Bottom	1532	338.06	24.43	13.98	157.92	52.20	8.65	1536.50	4157.90	9123.20	59113.10	38557.61	1.26	1.00	2.21	3.69
34S	Top	1534	109.45	150.18	187.79	136.85	14.12	47.23	2167.10	5582.10	13792.50	117071.73	65947.54	1.28	1.00	4.60	7.68
	Bottom	1534	114.29	64.5	98.73	136.85	0.06	91.67	2167.10	5582.10	13792.50	117071.73	65947.54	1.28	1.00	4.68	7.82
35S	Top	1536	441.13	282.31	288.88	178.64	0.00	109.83	3504.10	8893.90	25654.00	169625.93	73722.61	1.25	1.00	5.18	8.65
	Bottom	1536	450.3	0	0	178.64	204.56	0.00	3504.10	8893.90	25654.00	169625.93	73722.61	1.25	1.00	4.13	6.90
36S	Top	1538	456.54	144.69	320.16	165.29	63.63	0.00	3521.50	8893.90	25654.00	258957.37	112547.73	1.24	1.00	5.46	9.13
	Bottom	1538	465.71	0	0	165.29	0.00	128.41	3521.50	8893.90	25654.00	258957.37	112547.73	1.24	1.00	5.93	9.91



Made By: GHD  
Checked By: CTG

Date: 4/10/2012  
Date: 4/13/2012

Job No.: P402110046  
Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					$\frac{P}{P_u} + \frac{MC}{M_u \left(1 - \frac{P}{A_s F_c}\right)} \leq 1.0$		Rating Factor	
			Dead Load			HS20 (Max My)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>				
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips	IMPACT	Condition Equation	Inv.	Opr.
14N	Top	1493	129.11	13.37	437.53	134.26	22.67	215.25	2135.80	5807.40	15091.10	183481.77	69018.60	1.27	1.00	3.92	6.55
	Bottom	1493	132.1	4.35	159.87	134.26	23.42	84.25	2135.80	5807.40	15091.10	183481.77	69018.60	1.27	1.00	4.52	7.54
15N	Top	1495	181.85	2.99	421.78	112.07	32.69	0.00	1876.90	5258.80	11036.20	116218.33	77375.32	1.29	1.00	4.47	7.46
	Bottom	1701	185.03	3.8	215.55	145.30	29.26	30.60	1876.90	5258.80	11036.20	116218.33	77375.32	1.29	1.00	3.53	5.89
16N	Top	1497	222.8	10.55	290.01	147.50	40.52	19.96	1876.40	5258.80	11036.20	112015.10	74576.91	1.29	1.00	3.27	5.46
	Bottom	1703	226.03	1.25	108.23	11.83	33.29	2.61	1876.40	5258.80	11036.20	112015.10	74576.91	1.29	1.00	22.93	38.29
17N	Top	1499	171.07	17.61	426.06	134.84	33.31	0.00	1873.80	5258.80	11036.20	94713.82	63058.14	1.29	1.00	3.76	6.28
	Bottom	1705	174.8	12.91	203.46	134.84	23.92	32.57	1873.80	5258.80	11036.20	94713.82	63058.14	1.29	1.00	3.82	6.38
18N	Top	1501	199.29	1.69	171.13	122.32	45.28	18.74	1651.50	4376.30	10124.90	84953.56	52304.90	1.29	1.00	3.40	5.68
	Bottom	1707	202.56	0.06	68.13	122.32	29.24	9.00	1651.50	4376.30	10124.90	84953.56	52304.90	1.29	1.00	3.65	6.09
19N	Top	1503	211.59	10.59	185.03	147.74	32.35	0.00	1650.40	4376.30	10124.90	79352.66	48856.49	1.29	1.00	2.98	4.97
	Bottom	1709	215.21	8.7	96.02	147.74	24.01	26.04	1650.40	4376.30	10124.90	79352.66	48856.49	1.29	1.00	2.99	4.99
20N	Top	1505	183.75	49.06	435.19	0.00	23.82	0.00	2349.90	6465.40	15025.20	85984.74	50309.76	1.28	1.00	82.89	138.43
	Bottom	1505	189.82	0	0	77.58	67.97	0.00	2349.90	6465.40	15025.20	85984.74	50309.76	1.28	1.00	7.36	12.30
21N	Top	1507	372.95	55.44	36.51	148.71	97.03	51.22	2278.20	5791.70	14821.40	128698.63	69474.54	1.26	1.00	3.30	5.51
	Bottom	1507	377.77	27.53	29.74	150.53	59.06	66.81	2278.20	5791.70	14821.40	128698.63	69474.54	1.26	1.00	3.51	5.87
22N	Top	1509	300.78	113.72	111.65	135.41	84.98	97.41	2134.60	6038.60	12978.30	88759.06	56897.31	1.27	1.00	3.31	5.53
	Bottom	1509	305.69	26.32	71.96	114.62	60.06	238.51	2134.60	6038.60	12978.30	88759.06	56897.31	1.27	1.00	3.51	5.87
23N	Top	1511	104.65	2.86	41.58	62.89	21.27	0.00	1634.10	4376.30	10124.90	40198.84	24749.95	1.30	1.00	7.44	12.43
	Bottom	1511	108.67	0	0	109.53	27.37	7.18	1634.10	4376.30	10124.90	40198.84	24749.95	1.30	1.00	4.38	7.31
24N	Top	1513	203.13	16.61	52.8	133.52	14.73	51.15	1707.60	6550.20	10846.40	49478.05	32080.12	1.29	1.00	3.49	5.83
	Bottom	1513	207.56	1.75	22.77	148.23	41.03	20.88	1707.60	6550.20	10846.40	49478.05	32080.12	1.29	1.00	3.14	5.25
25N	Top	1515	209.86	18.58	68.68	0.00	23.82	0.00	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	80.84	135.01
	Bottom	1515	214.33	13.96	39	60.92	19.13	9.80	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	7.46	12.45
26N	Top	1517	120.4	87.54	285.14	19.52	14.08	17.79	2166.10	5820.10	13949.00	53573.69	30632.52	1.29	1.00	24.57	41.03
	Bottom	1517	127.62	0	0	88.01	79.70	0.00	2166.10	5820.10	13949.00	53573.69	30632.52	1.29	1.00	6.05	10.10
27N	Top	1519	231.3	101.15	160.65	148.77	67.41	0.00	1959.60	5390.00	11910.80	63775.61	40064.05	1.29	1.00	3.25	5.42
	Bottom	1711	236.59	57.22	75	153.64	37.37	40.82	1959.60	5390.00	11910.80	63775.61	40064.05	1.29	1.00	3.30	5.51
28N	Top	1521	232.66	43.13	189.1	139.74	49.29	61.09	1961.00	5390.00	11910.80	66899.22	42026.32	1.29	1.00	3.39	5.67
	Bottom	1713	237.85	24.35	79.31	131.62	28.02	27.08	1961.00	5390.00	11910.80	66899.22	42026.32	1.29	1.00	3.96	6.62
29N	Top	1523	194.15	129.59	241.85	65.01	87.69	0.00	2063.80	5606.10	12927.50	58454.03	34974.38	1.29	1.00	6.20	10.36
	Bottom	1523	200.32	0	0	0.42	2.81	0.00	2063.80	5606.10	12927.50	58454.03	34974.38	1.29	1.00	440.70	735.97







Made By: GHD  
 Checked By: CTG

Date: 4/10/2012  
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Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					$\frac{P}{P_u} + \frac{MC}{M_u \left(1 - \frac{P}{A_s F_e}\right)} \leq 1.0$		Rating Factor	
			Dead Load			HS20 (Max My)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>				
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips				
23S	Top	1512	119.85	95.65	625.15	96.55	88.86	0.00	2818.40	7672.50	19226.80	73711.90	38813.92	1.28	1.00	6.92	11.56
	Bottom	1512	129	0	0	78.98	67.42	30.02	2818.40	7672.50	19226.80	73711.90	38813.92	1.28	1.00	8.78	14.66
24S	Top	1514	177.76	19.75	46.14	158.48	36.99	10.24	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	3.06	5.11
	Bottom	1514	182.39	4.2	23.57	158.48	68.10	4.05	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	2.94	4.91
25S	Top	1516	173.51	1.43	80	87.63	21.07	12.05	1704.20	6550.20	10846.40	44067.05	28571.79	1.29	1.00	190.75	318.56
	Bottom	1516	178.18	4.73	39.84	87.63	38.37	22.18	1704.20	6550.20	10846.40	44067.05	28571.79	1.29	1.00	5.14	8.58
26S	Top	1518	135.33	120.24	245.35	1.13	3.35	1.45	2162.40	5820.10	13949.00	49673.65	28402.55	1.28	1.00	256.56	428.46
	Bottom	1518	142.8	0	0	86.45	99.17	0.00	2162.40	5820.10	13949.00	49673.65	28402.55	1.28	1.00	5.72	9.56
27S	Top	1520	216.4	48.11	194.5	129.13	50.50	0.00	1959.00	5390.00	11910.80	62461.78	39238.70	1.28	1.00	198.79	331.98
	Bottom	1712	221.73	29.6	85.42	129.13	25.90	73.62	1959.00	5390.00	11910.80	62461.78	39238.70	1.28	1.00	3.89	6.50
28S	Top	1522	218.96	101.84	156.84	150.89	7.73	12.39	1960.40	5390.00	11910.80	65488.22	41139.92	1.28	1.00	3.67	6.14
	Bottom	1714	224.19	54.69	70.48	150.84	30.20	66.35	1960.40	5390.00	11910.80	65488.22	41139.92	1.28	1.00	3.38	5.64
29S	Top	1524	158.65	107.95	263.55	65.84	103.37	0.00	2065.70	5606.10	12927.50	61732.28	36935.84	1.28	1.00	6.02	10.05
	Bottom	1524	164.69	0	0	128.44	24.73	30.23	2065.70	5606.10	12927.50	61732.28	36935.84	1.28	1.00	4.66	7.79
30S	Top	1526	240.32	79.03	115.07	115.66	39.53	126.54	1800.70	4896.30	11154.20	78305.20	48628.90	1.28	1.00	3.39	5.66
	Bottom	1526	244.39	40.1	51.65	115.66	68.50	55.72	1800.70	4896.30	11154.20	78305.20	48628.90	1.28	1.00	3.48	5.80
31S	Top	1528	241.39	73.07	130.24	115.97	72.53	56.37	1800.80	4896.30	11154.20	78427.17	48704.65	1.28	1.00	3.36	5.61
	Bottom	1528	245.46	46.95	55.51	115.97	37.60	117.57	1800.80	4896.30	11154.20	78427.17	48704.65	1.28	1.00	3.48	5.81
32S	Top	1530	130.23	70.87	25.89	83.15	53.68	87.27	1537.70	4157.90	9123.20	63164.35	41200.11	1.29	1.00	4.02	6.71
	Bottom	1530	133.84	47.56	5.65	83.15	107.53	41.80	1537.70	4157.90	9123.20	63164.35	41200.11	1.29	1.00	3.67	6.13
33S	Top	1532	334.39	105.09	1.34	114.99	63.45	85.19	1536.50	4157.90	9123.20	59113.10	38557.61	1.26	1.00	2.50	4.17
	Bottom	1532	338.06	24.43	13.98	114.99	101.19	37.64	1536.50	4157.90	9123.20	59113.10	38557.61	1.26	1.00	2.48	4.14
34S	Top	1534	109.45	150.18	187.79	81.16	166.12	100.96	2167.10	5582.10	13792.50	117071.73	65947.54	1.28	1.00	4.25	7.10
	Bottom	1534	114.29	64.5	98.73	81.16	56.63	187.48	2167.10	5582.10	13792.50	117071.73	65947.54	1.28	1.00	5.32	8.89
35S	Top	1536	441.13	282.31	288.88	83.16	55.75	0.00	3504.10	8893.90	25654.00	169625.93	73722.61	1.25	1.00	9.54	15.94
	Bottom	1536	450.3	0	0	175.64	230.56	0.00	3504.10	8893.90	25654.00	169625.93	73722.61	1.25	1.00	4.02	6.71
36S	Top	1538	456.54	144.69	320.16	132.67	236.40	0.00	3521.50	8893.90	25654.00	258957.37	112547.73	1.24	1.00	4.59	7.67
	Bottom	1538	465.71	0	0	120.33	220.36	0.00	3521.50	8893.90	25654.00	258957.37	112547.73	1.24	1.00	5.22	8.72







Made By:   GHD    
 Checked By:   CTG  

Date:   4/10/2012    
 Date:   4/13/2012  

Job No.:   P402110046    
 Sheet No.:                   

COLUMNS			SERVICE LOADS						CAPACITIES					Rating Factor			
			Dead Load			HS20 (Max Mz)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			IMPACT	Condition Equation
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips			Inv.	Opr.
23S	Top	1512	119.85	95.65	625.15	0.00	0.00	73.00	2818.40	7672.50	19226.80	73711.90	38813.92	1.28	1.00	84.01	140.29
	Bottom	1512	129	0	0	96.55	0.00	558.31	2818.40	7672.50	19226.80	73711.90	38813.92	1.28	1.00	5.27	8.80
24S	Top	1514	177.76	19.75	46.14	113.13	14.84	53.59	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	4.13	6.90
	Bottom	1514	182.39	4.2	23.57	113.13	23.85	25.51	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	4.22	7.04
25S	Top	1516	173.51	1.43	80	125.22	9.30	37.01	1704.20	6550.20	10846.40	44067.05	28571.79	1.29	1.00	3.90	6.51
	Bottom	1516	178.18	4.73	39.84	116.50	7.47	76.08	1704.20	6550.20	10846.40	44067.05	28571.79	1.29	1.00	3.98	6.65
26S	Top	1518	135.33	120.24	245.35	78.19	0.00	249.48	2162.40	5820.10	13949.00	49673.65	28402.55	1.28	1.00	5.68	9.48
	Bottom	1518	142.8	0	0	114.27	47.96	27.10	2162.40	5820.10	13949.00	49673.65	28402.55	1.28	1.00	5.19	8.66
27S	Top	1520	216.4	48.11	194.5	121.31	7.00	16.41	1959.00	5390.00	11910.80	62461.78	39238.70	1.28	1.00	4.57	7.64
	Bottom	1712	221.73	29.6	85.42	139.68	24.84	75.05	1959.00	5390.00	11910.80	62461.78	39238.70	1.28	1.00	3.64	6.08
28S	Top	1522	218.96	101.84	156.84	150.84	0.00	146.04	1960.40	5390.00	11910.80	65488.22	41139.92	1.28	1.00	3.26	5.45
	Bottom	1714	224.19	54.69	70.48	129.49	29.74	66.49	1960.40	5390.00	11910.80	65488.22	41139.92	1.28	1.00	3.85	6.43
29S	Top	1524	158.65	107.95	263.55	0.00	0.00	9.00	2065.70	5606.10	12927.50	61732.28	36935.84	1.28	1.00	436.28	728.59
	Bottom	1524	164.69	0	0	91.64	0.00	252.45	2065.70	5606.10	12927.50	61732.28	36935.84	1.28	1.00	4.99	8.33
30S	Top	1526	240.32	79.03	115.07	115.66	39.53	126.54	1800.70	4896.30	11154.20	78305.20	48628.90	1.28	1.00	3.39	5.66
	Bottom	1526	244.39	40.1	51.65	115.66	68.50	55.72	1800.70	4896.30	11154.20	78305.20	48628.90	1.28	1.00	3.47	5.80
31S	Top	1528	241.39	73.07	130.24	115.97	72.53	56.37	1800.80	4896.30	11154.20	78427.17	48704.65	1.28	1.00	3.36	5.61
	Bottom	1528	245.46	46.95	55.51	115.97	37.60	117.57	1800.80	4896.30	11154.20	78427.17	48704.65	1.28	1.00	3.48	5.81
32S	Top	1530	130.23	70.87	25.89	72.14	51.13	91.23	1537.70	4157.90	9123.20	63164.35	41200.11	1.29	1.00	4.45	7.42
	Bottom	1530	133.84	47.56	5.65	51.21	92.10	44.49	1537.70	4157.90	9123.20	63164.35	41200.11	1.29	1.00	5.14	8.59
33S	Top	1532	334.39	105.09	1.34	114.99	63.45	85.19	1536.50	4157.90	9123.20	59113.10	38557.61	1.26	1.00	2.50	4.17
	Bottom	1532	338.06	24.43	13.98	125.76	34.93	76.95	1536.50	4157.90	9123.20	59113.10	38557.61	1.26	1.00	2.60	4.34
34S	Top	1534	109.45	150.18	187.79	81.16	166.12	100.96	2167.10	5582.10	13792.50	117071.73	65947.54	1.28	1.00	4.25	7.10
	Bottom	1534	114.29	64.5	98.73	90.65	54.85	188.16	2167.10	5582.10	13792.50	117071.73	65947.54	1.28	1.00	4.99	8.33
35S	Top	1536	441.13	282.31	288.88	156.20	0.00	189.69	3504.10	8893.90	25654.00	169625.93	73722.61	1.25	1.00	5.50	9.18
	Bottom	1536	450.3	0	0	112.57	0.00	83.42	3504.10	8893.90	25654.00	169625.93	73722.61	1.25	1.00	8.64	14.44
36S	Top	1538	456.54	144.69	320.16	110.94	0.00	154.54	3521.50	8893.90	25654.00	258957.37	112547.73	1.24	1.00	7.86	13.12
	Bottom	1538	465.71	0	0	132.67	0.00	247.57	3521.50	8893.90	25654.00	258957.37	112547.73	1.24	1.00	6.49	10.85



Made By: GHD  
Checked By: CTG

Date: 4/10/2012  
Date: 4/13/2012

Job No.: P402110046  
Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					IMPACT		Condition Equation	Rating Factor
			Dead Load			2F1 (Max P)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>				
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips			Opr.	
14N	Top	1493	129.11	13.37	437.53	59.42	11.15	78.76	2135.80	5807.40	15091.10	183481.77	69018.60	1.27	1.00	9.10	
	Bottom	1493	132.1	4.35	159.87	59.42	10.97	30.84	2135.80	5807.40	15091.10	183481.77	69018.60	1.27	1.00	10.31	
15N	Top	1495	181.85	2.99	421.78	68.30	20.21	0.00	1876.90	5258.80	11036.20	116218.33	77375.32	1.29	1.00	7.32	
	Bottom	1701	185.03	3.8	215.55	68.30	15.61	8.01	1876.90	5258.80	11036.20	116218.33	77375.32	1.29	1.00	7.55	
16N	Top	1497	222.8	10.55	290.01	71.35	16.24	34.20	1876.40	5258.80	11036.20	112015.10	74576.91	1.29	1.00	6.51	
	Bottom	1703	226.03	1.25	108.23	71.35	14.07	15.82	1876.40	5258.80	11036.20	112015.10	74576.91	1.29	1.00	7.03	
17N	Top	1499	171.07	17.61	426.06	65.07	14.71	0.00	1873.80	5258.80	11036.20	94713.82	63058.14	1.29	1.00	7.85	
	Bottom	1705	174.8	12.91	203.46	65.07	11.16	11.87	1873.80	5258.80	11036.20	94713.82	63058.14	1.29	1.00	8.00	
18N	Top	1501	199.29	1.69	171.13	62.38	17.99	31.27	1651.50	4376.30	10124.90	84953.56	52304.90	1.29	1.00	6.52	
	Bottom	1707	202.56	0.06	68.13	62.38	11.99	14.51	1651.50	4376.30	10124.90	84953.56	52304.90	1.29	1.00	7.10	
19N	Top	1503	211.59	10.59	185.03	67.33	16.23	0.00	1650.40	4376.30	10124.90	79352.66	48856.49	1.29	1.00	6.48	
	Bottom	1709	215.21	8.7	96.02	67.33	11.81	8.08	1650.40	4376.30	10124.90	79352.66	48856.49	1.29	1.00	6.59	
20N	Top	1505	183.75	49.06	435.19	66.27	0.00	54.93	2349.90	6465.40	15025.20	85984.74	50309.76	1.28	1.00	9.56	
	Bottom	1505	189.82	0	0	66.27	6.71	0.00	2349.90	6465.40	15025.20	85984.74	50309.76	1.28	1.00	11.01	
21N	Top	1507	372.95	55.44	36.51	64.40	44.32	0.00	2278.20	5791.70	14821.40	128698.63	69474.54	1.26	1.00	7.86	
	Bottom	1507	377.77	27.53	29.74	64.40	27.44	3.53	2278.20	5791.70	14821.40	128698.63	69474.54	1.26	1.00	8.55	
22N	Top	1509	300.78	113.72	111.65	68.13	24.53	10.89	2134.60	6038.60	12978.30	88759.06	56897.31	1.27	1.00	7.67	
	Bottom	1509	305.69	26.32	71.96	68.13	3.68	16.28	2134.60	6038.60	12978.30	88759.06	56897.31	1.27	1.00	8.59	
23N	Top	1511	104.65	2.86	41.58	68.96	0.00	0.00	1634.10	4376.30	10124.90	40198.84	24749.95	1.30	1.00	7.67	
	Bottom	1511	108.67	0	0	68.96	10.30	12.49	1634.10	4376.30	10124.90	40198.84	24749.95	1.30	1.00	7.08	
24N	Top	1513	203.13	16.61	52.8	68.05	1.97	5.53	1707.60	6550.20	10846.40	49478.05	32080.12	1.29	1.00	7.33	
	Bottom	1513	207.56	1.75	22.77	68.05	13.25	5.06	1707.60	6550.20	10846.40	49478.05	32080.12	1.29	1.00	7.06	
25N	Top	1515	209.86	18.58	68.68	72.04	9.80	3.01	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	6.70	
	Bottom	1515	214.33	13.96	39	72.04	8.20	10.19	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	6.65	
26N	Top	1517	120.4	87.54	285.14	64.00	0.00	22.13	2166.10	5820.10	13949.00	53573.69	30632.52	1.29	1.00	10.10	
	Bottom	1517	127.62	0	0	64.00	11.79	0.00	2166.10	5820.10	13949.00	53573.69	30632.52	1.29	1.00	10.46	
27N	Top	1519	231.3	101.15	160.65	68.56	26.80	1.99	1959.60	5390.00	11910.80	63775.61	40064.05	1.29	1.00	7.16	
	Bottom	1711	236.59	57.22	75	68.56	15.36	2.79	1959.60	5390.00	11910.80	63775.61	40064.05	1.29	1.00	7.71	
28N	Top	1521	232.66	43.13	189.1	67.58	17.65	37.27	1961.00	5390.00	11910.80	66899.22	42026.32	1.29	1.00	7.11	
	Bottom	1713	237.85	24.35	79.31	67.58	9.96	18.82	1961.00	5390.00	11910.80	66899.22	42026.32	1.29	1.00	7.81	
29N	Top	1523	194.15	129.59	241.85	66.69	8.41	0.00	2063.80	5606.10	12927.50	58454.03	34974.38	1.29	1.00	8.70	
	Bottom	1523	200.32	0	0	66.69	0.00	8.48	2063.80	5606.10	12927.50	58454.03	34974.38	1.29	1.00	9.49	



Made By: GHD  
 Checked By: CTG

Date: 4/10/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES							Rating Factor
			Dead Load			2F1 (Max P)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips	IMPACT	Condition Equation	Opr.
30N	Top	1525	261.42	57.7	116.49	64.13	6.27	27.59	1797.90	4896.30	11154.20	68492.86	42535.26	1.28	1.00	7.11
	Bottom	1525	265.73	26.48	46.58	64.13	5.32	16.13	1797.90	4896.30	11154.20	68492.86	42535.26	1.28	1.00	7.48
31N	Top	1527	261.87	94.44	135.17	65.23	19.80	3.78	1799.50	4896.30	11154.20	73706.03	45772.73	1.28	1.00	6.80
	Bottom	1527	266.05	60.56	66.18	65.23	12.94	5.46	1799.50	4896.30	11154.20	73706.03	45772.73	1.28	1.00	7.15
32N	Top	1529	225.84	282.11	524.59	64.87	0.00	35.87	2356.50	6465.40	15025.20	107045.31	62632.32	1.27	1.00	9.33
	Bottom	1715	232.56	136.23	185.22	64.87	1.06	15.36	2356.50	6465.40	15025.20	107045.31	62632.32	1.27	1.00	10.44
33N	Top	1531	379.21	184.85	128.61	71.55	26.63	8.18	2361.80	6465.40	15025.20	133600.12	78169.57	1.27	1.00	7.72
	Bottom	1531	384.33	76.26	80.69	71.55	8.93	12.51	2361.80	6465.40	15025.20	133600.12	78169.57	1.27	1.00	8.57
34N	Top	1533	131.26	14	14.77	63.89	14.41	1.36	1534.00	4157.90	9123.20	52023.88	33933.53	1.28	1.00	7.00
	Bottom	1533	135.17	4.53	12.21	63.89	11.27	2.79	1534.00	4157.90	9123.20	52023.88	33933.53	1.28	1.00	7.10
35N	Top	1535	511.09	129.11	300.23	72.78	0.00	47.07	3478.90	8893.90	25654.00	113183.93	49191.86	1.24	1.00	12.62
	Bottom	1535	521.9	0	0	72.78	34.58	0.00	3478.90	8893.90	25654.00	113183.93	49191.86	1.24	1.00	12.06
36N	Top	1537	495.35	270.55	260.94	80.56	84.48	0.00	3521.30	8893.90	25654.00	257873.87	112076.82	1.25	1.00	8.68
	Bottom	1537	506.16	0	0	80.56	0.00	51.10	3521.30	8893.90	25654.00	257873.87	112076.82	1.25	1.00	12.03
14S	Top	1494	116.09	10.88	385.88	56.71	15.63	73.39	2135.60	5807.40	15091.10	181009.38	68088.58	1.27	1.00	9.47
	Bottom	1494	119.09	7.4	140.37	56.71	23.91	28.39	2135.60	5807.40	15091.10	181009.38	68088.58	1.27	1.00	10.15
15S	Top	1496	160.38	3.92	370.27	65.21	0.00	0.00	1876.40	5258.80	11036.20	111596.94	74298.51	1.29	1.00	8.71
	Bottom	1702	163.63	3.13	189.61	65.21	10.31	7.62	1876.40	5258.80	11036.20	111596.94	74298.51	1.29	1.00	8.26
16S	Top	1498	205.01	1.11	263.82	68.77	0.00	31.74	1875.30	5258.80	11036.20	103983.04	69229.36	1.29	1.00	7.48
	Bottom	1704	208.35	6.22	100.38	68.77	9.70	14.63	1875.30	5258.80	11036.20	103983.04	69229.36	1.29	1.00	7.57
17S	Top	1500	149.75	15.08	374.44	68.34	0.00	0.00	1871.40	5258.80	11036.20	82440.03	54886.55	1.29	1.00	8.31
	Bottom	1706	153.7	2.93	179.58	68.34	3.41	8.75	1871.40	5258.80	11036.20	82440.03	54886.55	1.29	1.00	8.22
18S	Top	1502	184.51	14.84	153.58	69.31	1.19	27.13	1649.00	4376.30	10124.90	73112.04	45014.22	1.29	1.00	6.60
	Bottom	1708	187.99	6.51	63.06	69.31	0.00	12.21	1649.00	4376.30	10124.90	73112.04	45014.22	1.29	1.00	6.97
19S	Top	1504	195.09	2.18	166.59	71.64	0.00	0.00	1647.80	4376.30	10124.90	68624.16	42251.08	1.29	1.00	6.80
	Bottom	1710	198.94	2.13	85.64	71.64	3.07	7.33	1647.80	4376.30	10124.90	68624.16	42251.08	1.29	1.00	6.63
20S	Top	1506	165.32	93.06	516.07	64.41	0.00	57.79	2173.60	6411.00	13022.80	61419.65	41623.62	1.28	1.00	8.73
	Bottom	1506	171.7	0	0	64.41	32.33	0.00	2173.60	6411.00	13022.80	61419.65	41623.62	1.28	1.00	9.31
21S	Top	1508	282.96	5.36	211.45	80.05	25.93	13.40	2621.60	7258.20	17136.00	103760.01	58906.39	1.27	1.00	8.76
	Bottom	1508	289.48	2.89	109.33	80.05	0.00	23.63	2621.60	7258.20	17136.00	103760.01	58906.39	1.27	1.00	9.65
22S	Top	1510	282.09	144.25	318.81	78.89	8.86	43.59	2734.80	7465.90	18178.40	120621.95	65891.76	1.27	1.00	9.14
	Bottom	1510	288.66	47.23	162.26	78.89	0.00	17.21	2734.80	7465.90	18178.40	120621.95	65891.76	1.27	1.00	10.30



Made By: GHD  
Checked By: CTG

Date: 4/10/2012  
Date: 4/13/2012

Job No.: P402110046  
Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					IMPACT	Condition Equation	Rating Factor Opr.
			Dead Load			2F1 (Max P)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips			
23S	Top	1512	119.85	95.65	625.15	63.53	0.00	0.00	2818.40	7672.50	19226.80	73711.90	38813.92	1.28	1.00	14.16
	Bottom	1512	129	0	0	63.53	34.13	49.40	2818.40	7672.50	19226.80	73711.90	38813.92	1.28	1.00	511.99
24S	Top	1514	177.76	19.75	46.14	67.91	16.68	0.71	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	7.18
	Bottom	1514	182.39	4.2	23.57	67.91	30.89	0.00	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	6.85
25S	Top	1516	173.51	1.43	80	66.03	6.53	10.13	1704.20	6550.20	10846.40	44067.05	28571.79	1.29	1.00	7.51
	Bottom	1516	178.18	4.73	39.84	66.03	10.54	19.08	1704.20	6550.20	10846.40	44067.05	28571.79	1.29	1.00	7.25
26S	Top	1518	135.33	120.24	245.35	61.27	0.00	0.00	2162.40	5820.10	13949.00	49673.65	28402.55	1.28	1.00	11.00
	Bottom	1518	142.8	0	0	61.27	29.19	1.55	2162.40	5820.10	13949.00	49673.65	28402.55	1.28	1.00	166.29
27S	Top	1520	216.4	48.11	194.5	78.50	5.86	0.00	1959.00	5390.00	11910.80	62461.78	39238.70	1.28	1.00	7.19
	Bottom	1712	221.73	29.6	85.42	78.50	0.62	11.36	1959.00	5390.00	11910.80	62461.78	39238.70	1.28	1.00	7.30
28S	Top	1522	218.96	101.84	156.84	79.54	0.00	26.19	1960.40	5390.00	11910.80	65488.22	41139.92	1.28	1.00	6.82
	Bottom	1714	224.19	54.69	70.48	79.54	2.81	9.54	1960.40	5390.00	11910.80	65488.22	41139.92	1.28	1.00	7.12
29S	Top	1524	158.65	107.95	263.55	67.28	0.00	0.00	2065.70	5606.10	12927.50	61732.28	36935.84	1.28	1.00	9.36
	Bottom	1524	164.69	0	0	67.28	7.41	29.49	2065.70	5606.10	12927.50	61732.28	36935.84	1.28	1.00	8.88
30S	Top	1526	240.32	79.03	115.07	71.33	5.77	14.01	1800.70	4896.30	11154.20	78305.20	48628.90	1.28	1.00	6.76
	Bottom	1526	244.39	40.1	51.65	71.33	4.47	2.76	1800.70	4896.30	11154.20	78305.20	48628.90	1.28	1.00	7.12
31S	Top	1528	241.39	73.07	130.24	66.45	5.52	15.26	1800.80	4896.30	11154.20	78427.17	48704.65	1.28	1.00	7.21
	Bottom	1528	245.46	46.95	55.51	66.45	6.38	25.48	1800.80	4896.30	11154.20	78427.17	48704.65	1.28	1.00	7.13
32S	Top	1530	130.23	70.87	25.89	60.58	16.88	7.85	1537.70	4157.90	9123.20	63164.35	41200.11	1.29	1.00	6.97
	Bottom	1530	133.84	47.56	5.65	60.58	25.04	11.12	1537.70	4157.90	9123.20	63164.35	41200.11	1.29	1.00	6.67
33S	Top	1532	334.39	105.09	1.34	67.26	0.30	1.17	1536.50	4157.90	9123.20	59113.10	38557.61	1.26	1.00	5.68
	Bottom	1532	338.06	24.43	13.98	67.26	17.22	10.61	1536.50	4157.90	9123.20	59113.10	38557.61	1.26	1.00	5.23
34S	Top	1534	109.45	150.18	187.79	61.90	8.06	12.09	2167.10	5582.10	13792.50	117071.73	65947.54	1.28	1.00	10.29
	Bottom	1534	114.29	64.5	98.73	61.90	15.41	24.37	2167.10	5582.10	13792.50	117071.73	65947.54	1.28	1.00	9.88
35S	Top	1536	441.13	282.31	288.88	75.74	0.00	49.71	3504.10	8893.90	25654.00	169625.93	73722.61	1.25	1.00	12.17
	Bottom	1536	450.3	0	0	75.74	92.25	0.00	3504.10	8893.90	25654.00	169625.93	73722.61	1.25	1.00	9.56
36S	Top	1538	456.54	144.69	320.16	69.65	27.17	0.00	3521.50	8893.90	25654.00	258957.37	112547.73	1.24	1.00	12.95
	Bottom	1538	465.71	0	0	69.65	0.00	55.54	3521.50	8893.90	25654.00	258957.37	112547.73	1.24	1.00	14.04





Made By: GHD  
 Checked By: CTG

Date: 4/10/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					Rating Factor		
			Dead Load			2F1 (Max My)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips	IMPACT	Condition Equation	Opr.
14N	Top	1493	129.11	13.37	437.53	47.58	15.50	0.98	2135.80	5807.40	15091.10	183481.77	69018.60	1.27	1.00	12.75
	Bottom	1493	132.1	4.35	159.87	47.58	11.50	0.48	2135.80	5807.40	15091.10	183481.77	69018.60	1.27	1.00	13.50
15N	Top	1495	181.85	2.99	421.78	68.30	20.21	0.00	1876.90	5258.80	11036.20	116218.33	77375.32	1.29	1.00	7.32
	Bottom	1701	185.03	3.8	215.55	68.30	15.61	8.01	1876.90	5258.80	11036.20	116218.33	77375.32	1.29	1.00	7.55
16N	Top	1497	222.8	10.55	290.01	66.01	19.10	1.38	1876.40	5258.80	11036.20	112015.10	74576.91	1.29	1.00	7.40
	Bottom	1703	226.03	1.25	108.23	66.01	15.29	0.58	1876.40	5258.80	11036.20	112015.10	74576.91	1.29	1.00	7.77
17N	Top	1499	171.07	17.61	426.06	64.19	16.56	0.00	1873.80	5258.80	11036.20	94713.82	63058.14	1.29	1.00	7.87
	Bottom	1705	174.8	12.91	203.46	64.19	11.92	7.10	1873.80	5258.80	11036.20	94713.82	63058.14	1.29	1.00	8.17
18N	Top	1501	199.29	1.69	171.13	61.20	23.76	5.92	1651.50	4376.30	10124.90	84953.56	52304.90	1.29	1.00	6.81
	Bottom	1707	202.56	0.06	68.13	61.20	15.23	2.97	1651.50	4376.30	10124.90	84953.56	52304.90	1.29	1.00	7.29
19N	Top	1503	211.59	10.59	185.03	67.33	16.23	0.00	1650.40	4376.30	10124.90	79352.66	48856.49	1.29	1.00	6.48
	Bottom	1709	215.21	8.7	96.02	64.74	11.81	8.14	1650.40	4376.30	10124.90	79352.66	48856.49	1.29	1.00	6.83
20N	Top	1505	183.75	49.06	435.19	0.00	11.13	0.00	2349.90	6465.40	15025.20	85984.74	50309.76	1.28	1.00	177.40
	Bottom	1505	189.82	0	0	35.32	30.04	0.00	2349.90	6465.40	15025.20	85984.74	50309.76	1.28	1.00	16.30
21N	Top	1507	372.95	55.44	36.51	64.40	44.32	0.00	2278.20	5791.70	14821.40	128698.63	69474.54	1.26	1.00	7.86
	Bottom	1507	377.77	27.53	29.74	64.40	27.44	3.53	2278.20	5791.70	14821.40	128698.63	69474.54	1.26	1.00	8.55
22N	Top	1509	300.78	113.72	111.65	60.18	38.33	40.48	2134.60	6038.60	12978.30	88759.06	56897.31	1.27	1.00	7.48
	Bottom	1509	305.69	26.32	71.96	10.35	27.80	0.00	2134.60	6038.60	12978.30	88759.06	56897.31	1.27	1.00	30.52
23N	Top	1511	104.65	2.86	41.58	30.22	12.09	0.00	1634.10	4376.30	10124.90	40198.84	24749.95	1.30	1.00	15.17
	Bottom	1511	108.67	0	0	40.22	12.96	138.81	1634.10	4376.30	10124.90	40198.84	24749.95	1.30	1.00	7.75
24N	Top	1513	203.13	16.61	52.8	56.85	6.88	25.26	1707.60	6550.20	10846.40	49478.05	32080.12	1.29	1.00	8.11
	Bottom	1513	207.56	1.75	22.77	65.02	17.71	7.98	1707.60	6550.20	10846.40	49478.05	32080.12	1.29	1.00	7.20
25N	Top	1515	209.86	18.58	68.68	70.90	12.37	8.60	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	6.66
	Bottom	1515	214.33	13.96	39	70.90	8.32	19.89	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	6.60
26N	Top	1517	120.4	87.54	285.14	3.04	8.55	8.20	2166.10	5820.10	13949.00	53573.69	30632.52	1.29	1.00	90.11
	Bottom	1517	127.62	0	0	32.01	38.91	0.00	2166.10	5820.10	13949.00	53573.69	30632.52	1.29	1.00	15.29
27N	Top	1519	231.3	101.15	160.65	66.70	28.03	0.00	1959.60	5390.00	11910.80	63775.61	40064.05	1.29	1.00	7.32
	Bottom	1711	236.59	57.22	75	67.76	15.77	7.21	1959.60	5390.00	11910.80	63775.61	40064.05	1.29	1.00	7.70
28N	Top	1521	232.66	43.13	189.1	62.24	23.14	23.95	1961.00	5390.00	11910.80	66899.22	42026.32	1.29	1.00	7.64
	Bottom	1713	237.85	24.35	79.31	7.13	13.27	14.97	1961.00	5390.00	11910.80	66899.22	42026.32	1.29	1.00	39.94
29N	Top	1523	194.15	129.59	241.85	26.46	43.47	0.00	2063.80	5606.10	12927.50	58454.03	34974.38	1.29	1.00	14.20
	Bottom	1523	200.32	0	0	1.15	1.88	1.07	2063.80	5606.10	12927.50	58454.03	34974.38	1.29	1.00	317.83



Made By: GHD  
 Checked By: CTG

Date: 4/10/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					Rating Factor		
			Dead Load			2F1 (Max My)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips	IMPACT	Condition Equation	Opr.
30N	Top	1525	261.42	57.7	116.49	38.38	13.53	41.92	1797.90	4896.30	11154.20	68492.86	42535.26	1.28	1.00	10.04
	Bottom	1525	265.73	26.48	46.58	38.38	25.35	19.67	1797.90	4896.30	11154.20	68492.86	42535.26	1.28	1.00	10.07
31N	Top	1527	261.87	94.44	135.17	47.87	28.27	17.94	1799.50	4896.30	11154.20	73706.03	45772.73	1.28	1.00	8.11
	Bottom	1527	266.05	60.56	66.18	13.04	16.14	14.77	1799.50	4896.30	11154.20	73706.03	45772.73	1.28	1.00	23.59
32N	Top	1529	225.84	282.11	524.59	0.00	13.82	0.00	2356.50	6465.40	15025.20	107045.31	62632.32	1.27	1.00	130.85
	Bottom	1715	232.56	136.23	185.22	40.70	16.91	60.24	2356.50	6465.40	15025.20	107045.31	62632.32	1.27	1.00	12.48
33N	Top	1531	379.21	184.85	128.61	60.40	65.61	29.74	2361.80	6465.40	15025.20	133600.12	78169.57	1.27	1.00	7.15
	Bottom	1531	384.33	76.26	80.69	60.40	40.77	65.26	2361.80	6465.40	15025.20	133600.12	78169.57	1.27	1.00	7.67
34N	Top	1533	131.26	14	14.77	37.19	24.20	13.85	1534.00	4157.90	9123.20	52023.88	33933.53	1.28	1.00	10.00
	Bottom	1533	135.17	4.53	12.21	43.26	12.75	24.05	1534.00	4157.90	9123.20	52023.88	33933.53	1.28	1.00	9.32
35N	Top	1535	511.09	129.11	300.23	53.92	86.20	0.00	3478.90	8893.90	25654.00	113183.93	49191.86	1.24	1.00	11.37
	Bottom	1535	521.9	0	0	60.56	93.34	0.00	3478.90	8893.90	25654.00	113183.93	49191.86	1.24	1.00	10.68
36N	Top	1537	495.35	270.55	260.94	79.64	85.62	0.00	3521.30	8893.90	25654.00	257873.87	112076.82	1.25	1.00	8.71
	Bottom	1537	506.16	0	0	42.92	33.45	0.00	3521.30	8893.90	25654.00	257873.87	112076.82	1.25	1.00	18.75
14S	Top	1494	116.09	10.88	385.88	45.40	16.49	0.43	2135.60	5807.40	15091.10	181009.38	68088.58	1.27	1.00	13.41
	Bottom	1494	119.09	7.4	140.37	45.40	28.16	0.27	2135.60	5807.40	15091.10	181009.38	68088.58	1.27	1.00	12.66
15S	Top	1496	160.38	3.92	370.27	28.76	5.83	0.00	1876.40	5258.80	11036.20	111596.94	74298.51	1.29	1.00	18.38
	Bottom	1702	163.63	3.13	189.61	8.48	10.31	4.83	1876.40	5258.80	11036.20	111596.94	74298.51	1.29	1.00	44.58
16S	Top	1498	205.01	1.11	263.82	38.20	4.32	110.18	1875.30	5258.80	11036.20	103983.04	69229.36	1.29	1.00	1107.75
	Bottom	1704	208.35	6.22	100.38	7.61	11.44	16.08	1875.30	5258.80	11036.20	103983.04	69229.36	1.29	1.00	39.06
17S	Top	1500	149.75	15.08	374.44	24.62	1.37	0.00	1871.40	5258.80	11036.20	82440.03	54886.55	1.29	1.00	22.62
	Bottom	1706	153.7	2.93	179.58	62.16	11.53	8.11	1871.40	5258.80	11036.20	82440.03	54886.55	1.29	1.00	8.62
18S	Top	1502	184.51	14.84	153.58	0.67	1.31	7.02	1649.00	4376.30	10124.90	73112.04	45014.22	1.29	1.00	210.91
	Bottom	1708	187.99	6.51	63.06	0.26	1.44	0.92	1649.00	4376.30	10124.90	73112.04	45014.22	1.29	1.00	519.13
19S	Top	1504	195.09	2.18	166.59	31.88	4.54	0.00	1647.80	4376.30	10124.90	68624.16	42251.08	1.29	1.00	14.47
	Bottom	1710	198.94	2.13	85.64	0.15	3.07	0.00	1647.80	4376.30	10124.90	68624.16	42251.08	1.29	1.00	374.28
20S	Top	1506	165.32	93.06	516.07	0.00	3.42	0.00	2173.60	6411.00	13022.80	61419.65	41623.62	1.28	1.00	560.66
	Bottom	1506	171.7	0	0	64.41	32.33	0.00	2173.60	6411.00	13022.80	61419.65	41623.62	1.28	1.00	9.31
21S	Top	1508	282.96	5.36	211.45	79.72	30.33	6.97	2621.60	7258.20	17136.00	103760.01	58906.39	1.27	1.00	8.74
	Bottom	1508	289.48	2.89	109.33	35.91	10.49	24.06	2621.60	7258.20	17136.00	103760.01	58906.39	1.27	1.00	18.56
22S	Top	1510	282.09	144.25	318.81	59.76	27.26	149.06	2734.80	7465.90	18178.40	120621.95	65891.76	1.27	1.00	8.76
	Bottom	1510	288.66	47.23	162.26	63.49	35.62	68.74	2734.80	7465.90	18178.40	120621.95	65891.76	1.27	1.00	9.60



Made By: GHD  
 Checked By: CTG

Date: 4/10/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					Rating Factor		
			Dead Load			2F1 (Max My)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips	IMPACT	Condition Equation	Opr.
23S	Top	1512	119.85	95.65	625.15	40.71	43.88	0.00	2818.40	7672.50	19226.80	73711.90	38813.92	1.28	1.00	919.49
	Bottom	1512	129	0	0	56.26	34.78	37.27	2818.40	7672.50	19226.80	73711.90	38813.92	1.28	1.00	264.93
24S	Top	1514	177.76	19.75	46.14	67.91	16.68	0.71	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	7.18
	Bottom	1514	182.39	4.2	23.57	67.91	30.89	0.00	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	6.85
25S	Top	1516	173.51	1.43	80	61.91	11.93	9.36	1704.20	6550.20	10846.40	44067.05	28571.79	1.29	1.00	7.83
	Bottom	1516	178.18	4.73	39.84	61.91	21.64	17.71	1704.20	6550.20	10846.40	44067.05	28571.79	1.29	1.00	7.39
26S	Top	1518	135.33	120.24	245.35	1.24	1.88	13.68	2162.40	5820.10	13949.00	49673.65	28402.55	1.28	1.00	163.92
	Bottom	1518	142.8	0	0	31.95	45.40	0.00	2162.40	5820.10	13949.00	49673.65	28402.55	1.28	1.00	14.43
27S	Top	1520	216.4	48.11	194.5	56.06	25.42	0.00	1959.00	5390.00	11910.80	62461.78	39238.70	1.28	1.00	467.17
	Bottom	1712	221.73	29.6	85.42	56.06	13.17	34.81	1959.00	5390.00	11910.80	62461.78	39238.70	1.28	1.00	8.81
28S	Top	1522	218.96	101.84	156.84	66.98	5.53	2.85	1960.40	5390.00	11910.80	65488.22	41139.92	1.28	1.00	8.24
	Bottom	1714	224.19	54.69	70.48	65.01	14.61	32.94	1960.40	5390.00	11910.80	65488.22	41139.92	1.28	1.00	7.70
29S	Top	1524	158.65	107.95	263.55	27.20	51.48	0.00	2065.70	5606.10	12927.50	61732.28	36935.84	1.28	1.00	13.53
	Bottom	1524	164.69	0	0	59.71	11.65	13.32	2065.70	5606.10	12927.50	61732.28	36935.84	1.28	1.00	10.05
30S	Top	1526	240.32	79.03	115.07	48.91	18.17	56.89	1800.70	4896.30	11154.20	78305.20	48628.90	1.28	1.00	7.87
	Bottom	1526	244.39	40.1	51.65	48.91	32.19	25.39	1800.70	4896.30	11154.20	78305.20	48628.90	1.28	1.00	8.02
31S	Top	1528	241.39	73.07	130.24	49.51	32.28	25.90	1800.80	4896.30	11154.20	78427.17	48704.65	1.28	1.00	7.78
	Bottom	1528	245.46	46.95	55.51	49.51	17.07	54.77	1800.80	4896.30	11154.20	78427.17	48704.65	1.28	1.00	8.01
32S	Top	1530	130.23	70.87	25.89	33.91	24.11	43.59	1537.70	4157.90	9123.20	63164.35	41200.11	1.29	1.00	9.43
	Bottom	1530	133.84	47.56	5.65	29.14	49.27	23.00	1537.70	4157.90	9123.20	63164.35	41200.11	1.29	1.00	9.31
33S	Top	1532	334.39	105.09	1.34	45.19	29.43	17.10	1536.50	4157.90	9123.20	59113.10	38557.61	1.26	1.00	600.80
	Bottom	1532	338.06	24.43	13.98	58.69	44.97	13.60	1536.50	4157.90	9123.20	59113.10	38557.61	1.26	1.00	5.07
34S	Top	1534	109.45	150.18	187.79	33.89	76.97	45.15	2167.10	5582.10	13792.50	117071.73	65947.54	1.28	1.00	9.69
	Bottom	1534	114.29	64.5	98.73	33.89	26.55	83.87	2167.10	5582.10	13792.50	117071.73	65947.54	1.28	1.00	12.30
35S	Top	1536	441.13	282.31	288.88	36.23	31.17	0.00	3504.10	8893.90	25654.00	169625.93	73722.61	1.25	1.00	20.67
	Bottom	1536	450.3	0	0	75.01	97.66	0.00	3504.10	8893.90	25654.00	169625.93	73722.61	1.25	1.00	9.44
36S	Top	1538	456.54	144.69	320.16	58.53	102.54	0.00	3521.50	8893.90	25654.00	258957.37	112547.73	1.24	1.00	10.48
	Bottom	1538	465.71	0	0	54.52	98.44	0.00	3521.50	8893.90	25654.00	258957.37	112547.73	1.24	1.00	11.60



Made By: GHD  
 Checked By: CTG

Date: 4/10/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					Rating Factor		
			Dead Load			2F1 (Max Mz)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips	IMPACT	Condition Equation	Opr.
14N	Top	1493	129.11	13.37	437.53	31.87	0.00	173.47	2135.80	5807.40	15091.10	183481.77	69018.60	1.27	1.00	11.99
	Bottom	1493	132.1	4.35	159.87	31.87	2.93	67.77	2135.80	5807.40	15091.10	183481.77	69018.60	1.27	1.00	16.40
15N	Top	1495	181.85	2.99	421.78	16.56	5.24	2.33	1876.90	5258.80	11036.20	116218.33	77375.32	1.29	1.00	29.36
	Bottom	1701	185.03	3.8	215.55	46.91	2.23	42.10	1876.90	5258.80	11036.20	116218.33	77375.32	1.29	1.00	10.34
16N	Top	1497	222.8	10.55	290.01	58.75	0.00	142.92	1876.40	5258.80	11036.20	112015.10	74576.91	1.29	1.00	6.49
	Bottom	1703	226.03	1.25	108.23	58.75	3.65	66.36	1876.40	5258.80	11036.20	112015.10	74576.91	1.29	1.00	7.78
17N	Top	1499	171.07	17.61	426.06	0.00	0.04	15.40	1873.80	5258.80	11036.20	94713.82	63058.14	1.29	1.00	209.72
	Bottom	1705	174.8	12.91	203.46	26.80	0.92	69.72	1873.80	5258.80	11036.20	94713.82	63058.14	1.29	1.00	14.52
18N	Top	1501	199.29	1.69	171.13	40.01	0.00	84.66	1651.50	4376.30	10124.90	84953.56	52304.90	1.29	1.00	8.98
	Bottom	1707	202.56	0.06	68.13	40.01	1.30	38.64	1651.50	4376.30	10124.90	84953.56	52304.90	1.29	1.00	10.49
19N	Top	1503	211.59	10.59	185.03	0.00	0.14	4.17	1650.40	4376.30	10124.90	79352.66	48856.49	1.29	1.00	647.90
	Bottom	1709	215.21	8.7	96.02	44.80	2.47	35.24	1650.40	4376.30	10124.90	79352.66	48856.49	1.29	1.00	9.34
20N	Top	1505	183.75	49.06	435.19	39.03	0.00	221.54	2349.90	6465.40	15025.20	85984.74	50309.76	1.28	1.00	9.64
	Bottom	1505	189.82	0	0	0.00	0.00	66.53	2349.90	6465.40	15025.20	85984.74	50309.76	1.28	1.00	72.41
21N	Top	1507	372.95	55.44	36.51	47.91	8.93	141.05	2278.20	5791.70	14821.40	128698.63	69474.54	1.26	1.00	8.76
	Bottom	1507	377.77	27.53	29.74	50.08	15.48	147.98	2278.20	5791.70	14821.40	128698.63	69474.54	1.26	1.00	8.16
22N	Top	1509	300.78	113.72	111.65	47.34	11.12	78.80	2134.60	6038.60	12978.30	88759.06	56897.31	1.27	1.00	9.36
	Bottom	1509	305.69	26.32	71.96	48.68	27.80	108.15	2134.60	6038.60	12978.30	88759.06	56897.31	1.27	1.00	8.06
23N	Top	1511	104.65	2.86	41.58	0.00	0.00	30.48	1634.10	4376.30	10124.90	40198.84	24749.95	1.30	1.00	107.04
	Bottom	1511	108.67	0	0	30.22	0.00	61.14	1634.10	4376.30	10124.90	40198.84	24749.95	1.30	1.00	13.08
24N	Top	1513	203.13	16.61	52.8	49.71	6.25	30.23	1707.60	6550.20	10846.40	49478.05	32080.12	1.29	1.00	9.04
	Bottom	1513	207.56	1.75	22.77	49.71	12.21	14.86	1707.60	6550.20	10846.40	49478.05	32080.12	1.29	1.00	9.23
25N	Top	1515	209.86	18.58	68.68	59.68	9.99	12.02	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	7.83
	Bottom	1515	214.33	13.96	39	13.42	47.60	25.64	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	16.70
26N	Top	1517	120.4	87.54	285.14	35.83	0.00	114.01	2166.10	5820.10	13949.00	53573.69	30632.52	1.29	1.00	12.57
	Bottom	1517	127.62	0	0	0.00	0.00	4.73	2166.10	5820.10	13949.00	53573.69	30632.52	1.29	1.00	971.30
27N	Top	1519	231.3	101.15	160.65	48.30	19.42	21.27	1959.60	5390.00	11910.80	63775.61	40064.05	1.29	1.00	9.55
	Bottom	1711	236.59	57.22	75	59.81	0.00	29.44	1959.60	5390.00	11910.80	63775.61	40064.05	1.29	1.00	8.89
28N	Top	1521	232.66	43.13	189.1	58.28	0.00	65.82	1961.00	5390.00	11910.80	66899.22	42026.32	1.29	1.00	8.23
	Bottom	1713	237.85	24.35	79.31	58.28	8.41	30.94	1961.00	5390.00	11910.80	66899.22	42026.32	1.29	1.00	8.72
29N	Top	1523	194.15	129.59	241.85	0.00	1.59	6.18	2063.80	5606.10	12927.50	58454.03	34974.38	1.29	1.00	385.13
	Bottom	1523	200.32	0	0	26.46	0.00	97.17	2063.80	5606.10	12927.50	58454.03	34974.38	1.29	1.00	15.18



Made By: GHD  
 Checked By: CTG

Date: 4/10/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					Rating Factor		
			Dead Load			2F1 (Max Mz)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips	IMPACT	Condition Equation	Opr.
30N	Top	1525	261.42	57.7	116.49	47.58	11.99	46.77	1797.90	4896.30	11154.20	68492.86	42535.26	1.28	1.00	8.45
	Bottom	1525	265.73	26.48	46.58	47.58	22.80	22.39	1797.90	4896.30	11154.20	68492.86	42535.26	1.28	1.00	8.60
31N	Top	1527	261.87	94.44	135.17	4.46	0.00	20.26	1799.50	4896.30	11154.20	73706.03	45772.73	1.28	1.00	63.80
	Bottom	1527	266.05	60.56	66.18	39.11	14.99	44.91	1799.50	4896.30	11154.20	73706.03	45772.73	1.28	1.00	9.73
32N	Top	1529	225.84	282.11	524.59	40.70	0.00	171.49	2356.50	6465.40	15025.20	107045.31	62632.32	1.27	1.00	9.67
	Bottom	1715	232.56	136.23	185.22	40.70	16.91	60.24	2356.50	6465.40	15025.20	107045.31	62632.32	1.27	1.00	12.48
33N	Top	1531	379.21	184.85	128.61	43.40	17.32	40.39	2361.80	6465.40	15025.20	133600.12	78169.57	1.27	1.00	11.35
	Bottom	1531	384.33	76.26	80.69	56.92	40.47	65.71	2361.80	6465.40	15025.20	133600.12	78169.57	1.27	1.00	8.00
34N	Top	1533	131.26	14	14.77	0.00	4.97	15.95	1534.00	4157.90	9123.20	52023.88	33933.53	1.28	1.00	107.44
	Bottom	1533	135.17	4.53	12.21	25.94	10.70	30.30	1534.00	4157.90	9123.20	52023.88	33933.53	1.28	1.00	13.82
35N	Top	1535	511.09	129.11	300.23	60.56	0.00	92.01	3478.90	8893.90	25654.00	113183.93	49191.86	1.24	1.00	13.60
	Bottom	1535	521.9	0	0	49.69	0.00	61.32	3478.90	8893.90	25654.00	113183.93	49191.86	1.24	1.00	17.87
36N	Top	1537	495.35	270.55	260.94	49.29	0.00	33.29	3521.30	8893.90	25654.00	257873.87	112076.82	1.25	1.00	18.36
	Bottom	1537	506.16	0	0	69.40	0.00	67.86	3521.30	8893.90	25654.00	257873.87	112076.82	1.25	1.00	13.37
14S	Top	1494	116.09	10.88	385.88	30.38	2.27	162.53	2135.60	5807.40	15091.10	181009.38	68088.58	1.27	1.00	12.67
	Bottom	1494	119.09	7.4	140.37	30.38	0.00	62.70	2135.60	5807.40	15091.10	181009.38	68088.58	1.27	1.00	17.93
15S	Top	1496	160.38	3.92	370.27	0.17	0.15	2.49	1876.40	5258.80	11036.20	111596.94	74298.51	1.29	1.00	872.85
	Bottom	1702	163.63	3.13	189.61	25.34	17.90	40.62	1876.40	5258.80	11036.20	111596.94	74298.51	1.29	1.00	14.96
16S	Top	1498	205.01	1.11	263.82	57.62	0.98	134.93	1875.30	5258.80	11036.20	103983.04	69229.36	1.29	1.00	6.83
	Bottom	1704	208.35	6.22	100.38	57.62	0.00	62.53	1875.30	5258.80	11036.20	103983.04	69229.36	1.29	1.00	8.27
17S	Top	1500	149.75	15.08	374.44	0.00	0.00	14.61	1871.40	5258.80	11036.20	82440.03	54886.55	1.29	1.00	228.90
	Bottom	1706	153.7	2.93	179.58	24.62	0.25	70.69	1871.40	5258.80	11036.20	82440.03	54886.55	1.29	1.00	15.80
18S	Top	1502	184.51	14.84	153.58	46.31	0.00	90.68	1649.00	4376.30	10124.90	73112.04	45014.22	1.29	1.00	7.98
	Bottom	1708	187.99	6.51	63.06	46.31	1.44	41.80	1649.00	4376.30	10124.90	73112.04	45014.22	1.29	1.00	9.24
19S	Top	1504	195.09	2.18	166.59	0.08	0.00	3.28	1647.80	4376.30	10124.90	68624.16	42251.08	1.29	1.00	786.29
	Bottom	1710	198.94	2.13	85.64	46.13	1.20	41.02	1647.80	4376.30	10124.90	68624.16	42251.08	1.29	1.00	373.91
20S	Top	1506	165.32	93.06	516.07	39.62	0.00	225.65	2173.60	6411.00	13022.80	61419.65	41623.62	1.28	1.00	8.32
	Bottom	1506	171.7	0	0	0.00	0.00	32.27	2173.60	6411.00	13022.80	61419.65	41623.62	1.28	1.00	130.18
21S	Top	1508	282.96	5.36	211.45	46.54	6.29	52.90	2621.60	7258.20	17136.00	103760.01	58906.39	1.27	1.00	14.04
	Bottom	1508	289.48	2.89	109.33	68.78	6.73	92.00	2621.60	7258.20	17136.00	103760.01	58906.39	1.27	1.00	9.43
22S	Top	1510	282.09	144.25	318.81	59.76	27.26	149.06	2734.80	7465.90	18178.40	120621.95	65891.76	1.27	1.00	8.76
	Bottom	1510	288.66	47.23	162.26	41.58	10.81	85.29	2734.80	7465.90	18178.40	120621.95	65891.76	1.27	1.00	14.26



Made By: GHD  
 Checked By: CTG

Date: 4/10/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					Rating Factor		
			Dead Load			2F1 (Max Mz)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips	IMPACT	Condition Equation	Opr.
23S	Top	1512	119.85	95.65	625.15	0.00	0.00	36.13	2818.40	7672.50	19226.80	73711.90	38813.92	1.28	1.00	169.74
	Bottom	1512	129	0	0	40.71	0.00	255.44	2818.40	7672.50	19226.80	73711.90	38813.92	1.28	1.00	12.02
24S	Top	1514	177.76	19.75	46.14	54.12	6.72	26.49	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	8.63
	Bottom	1514	182.39	4.2	23.57	0.00	1.46	12.60	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	219.48
25S	Top	1516	173.51	1.43	80	50.05	7.65	16.95	1704.20	6550.20	10846.40	44067.05	28571.79	1.29	1.00	9.50
	Bottom	1516	178.18	4.73	39.84	46.35	5.10	35.36	1704.20	6550.20	10846.40	44067.05	28571.79	1.29	1.00	9.76
26S	Top	1518	135.33	120.24	245.35	31.95	0.00	124.40	2162.40	5820.10	13949.00	49673.65	28402.55	1.28	1.00	12.94
	Bottom	1518	142.8	0	0	54.48	22.99	23.65	2162.40	5820.10	13949.00	49673.65	28402.55	1.28	1.00	10.58
27S	Top	1520	216.4	48.11	194.5	50.87	2.28	8.30	1959.00	5390.00	11910.80	62461.78	39238.70	1.28	1.00	10.91
	Bottom	1712	221.73	29.6	85.42	60.94	12.64	36.53	1959.00	5390.00	11910.80	62461.78	39238.70	1.28	1.00	8.20
28S	Top	1522	218.96	101.84	156.84	65.01	0.00	71.81	1960.40	5390.00	11910.80	65488.22	41139.92	1.28	1.00	7.41
	Bottom	1714	224.19	54.69	70.48	65.01	14.61	32.94	1960.40	5390.00	11910.80	65488.22	41139.92	1.28	1.00	7.70
29S	Top	1524	158.65	107.95	263.55	0.00	0.00	5.85	2065.70	5606.10	12927.50	61732.28	36935.84	1.28	1.00	671.20
	Bottom	1524	164.69	0	0	30.76	0.00	121.79	2065.70	5606.10	12927.50	61732.28	36935.84	1.28	1.00	13.08
30S	Top	1526	240.32	79.03	115.07	48.91	18.17	56.89	1800.70	4896.30	11154.20	78305.20	48628.90	1.28	1.00	7.87
	Bottom	1526	244.39	40.1	51.65	48.91	32.19	25.39	1800.70	4896.30	11154.20	78305.20	48628.90	1.28	1.00	8.02
31S	Top	1528	241.39	73.07	130.24	49.51	32.28	25.90	1800.80	4896.30	11154.20	78427.17	48704.65	1.28	1.00	7.78
	Bottom	1528	245.46	46.95	55.51	49.51	17.07	54.77	1800.80	4896.30	11154.20	78427.17	48704.65	1.28	1.00	8.01
32S	Top	1530	130.23	70.87	25.89	29.14	23.64	46.87	1537.70	4157.90	9123.20	63164.35	41200.11	1.29	1.00	1087.30
	Bottom	1530	133.84	47.56	5.65	29.14	49.27	23.00	1537.70	4157.90	9123.20	63164.35	41200.11	1.29	1.00	9.31
33S	Top	1532	334.39	105.09	1.34	48.05	27.30	37.24	1536.50	4157.90	9123.20	59113.10	38557.61	1.26	1.00	5.92
	Bottom	1532	338.06	24.43	13.98	8.58	0.00	35.76	1536.50	4157.90	9123.20	59113.10	38557.61	1.26	1.00	26.79
34S	Top	1534	109.45	150.18	187.79	37.84	75.26	45.34	2167.10	5582.10	13792.50	117071.73	65947.54	1.28	1.00	9.25
	Bottom	1534	114.29	64.5	98.73	37.84	26.01	84.57	2167.10	5582.10	13792.50	117071.73	65947.54	1.28	1.00	11.53
35S	Top	1536	441.13	282.31	288.88	65.67	0.00	81.62	3504.10	8893.90	25654.00	169625.93	73722.61	1.25	1.00	13.04
	Bottom	1536	450.3	0	0	42.70	0.00	40.60	3504.10	8893.90	25654.00	169625.93	73722.61	1.25	1.00	22.20
36S	Top	1538	456.54	144.69	320.16	46.89	0.00	69.98	3521.50	8893.90	25654.00	258957.37	112547.73	1.24	1.00	18.37
	Bottom	1538	465.71	0	0	58.53	0.00	106.25	3521.50	8893.90	25654.00	258957.37	112547.73	1.24	1.00	14.81



Made By: GHD  
 Checked By: CTG

Date: 4/10/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					Rating Factor		
			Dead Load			3F1 (Max P)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips	IMPACT	Condition Equation	Opr.
14N	Top	1493	129.11	13.37	437.53	88.62	15.46	134.62	2135.80	5807.40	15091.10	183481.77	69018.60	1.27	1.00	5.99
	Bottom	1493	132.1	4.35	159.87	88.62	15.73	52.69	2135.80	5807.40	15091.10	183481.77	69018.60	1.27	1.00	6.87
15N	Top	1495	181.85	2.99	421.78	102.66	26.33	0.00	1876.90	5258.80	11036.20	116218.33	77375.32	1.29	1.00	4.94
	Bottom	1701	185.03	3.8	215.55	102.66	21.84	17.95	1876.90	5258.80	11036.20	116218.33	77375.32	1.29	1.00	5.00
16N	Top	1497	222.8	10.55	290.01	108.57	23.33	62.73	1876.40	5258.80	11036.20	112015.10	74576.91	1.29	1.00	4.24
	Bottom	1703	226.03	1.25	108.23	108.57	20.65	29.04	1876.40	5258.80	11036.20	112015.10	74576.91	1.29	1.00	4.60
17N	Top	1499	171.07	17.61	426.06	97.96	23.60	0.00	1873.80	5258.80	11036.20	94713.82	63058.14	1.29	1.00	5.19
	Bottom	1705	174.8	12.91	203.46	97.96	17.40	16.31	1873.80	5258.80	11036.20	94713.82	63058.14	1.29	1.00	5.32
18N	Top	1501	199.29	1.69	171.13	94.01	35.07	14.61	1651.50	4376.30	10124.90	84953.56	52304.90	1.29	1.00	4.42
	Bottom	1707	202.56	0.06	68.13	94.01	22.60	7.06	1651.50	4376.30	10124.90	84953.56	52304.90	1.29	1.00	4.74
19N	Top	1503	211.59	10.59	185.03	101.18	23.31	0.00	1650.40	4376.30	10124.90	79352.66	48856.49	1.29	1.00	4.33
	Bottom	1709	215.21	8.7	96.02	101.18	17.47	10.82	1650.40	4376.30	10124.90	79352.66	48856.49	1.29	1.00	4.40
20N	Top	1505	183.75	49.06	435.19	100.39	0.00	33.06	2349.90	6465.40	15025.20	85984.74	50309.76	1.28	1.00	6.79
	Bottom	1505	189.82	0	0	100.39	3.87	0.00	2349.90	6465.40	15025.20	85984.74	50309.76	1.28	1.00	7.44
21N	Top	1507	372.95	55.44	36.51	98.45	66.51	7.04	2278.20	5791.70	14821.40	128698.63	69474.54	1.26	1.00	5.12
	Bottom	1507	377.77	27.53	29.74	98.45	41.17	6.21	2278.20	5791.70	14821.40	128698.63	69474.54	1.26	1.00	5.60
22N	Top	1509	300.78	113.72	111.65	104.08	34.46	12.74	2134.60	6038.60	12978.30	88759.06	56897.31	1.27	1.00	5.09
	Bottom	1509	305.69	26.32	71.96	104.08	3.96	16.73	2134.60	6038.60	12978.30	88759.06	56897.31	1.27	1.00	5.72
23N	Top	1511	104.65	2.86	41.58	102.09	0.00	0.00	1634.10	4376.30	10124.90	40198.84	24749.95	1.30	1.00	5.18
	Bottom	1511	108.67	0	0	102.09	11.91	26.45	1634.10	4376.30	10124.90	40198.84	24749.95	1.30	1.00	4.78
24N	Top	1513	203.13	16.61	52.8	102.27	3.59	11.76	1707.60	6550.20	10846.40	49478.05	32080.12	1.29	1.00	4.84
	Bottom	1513	207.56	1.75	22.77	102.27	20.32	9.10	1707.60	6550.20	10846.40	49478.05	32080.12	1.29	1.00	4.68
25N	Top	1515	209.86	18.58	68.68	110.21	15.98	6.32	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	4.36
	Bottom	1515	214.33	13.96	39	110.21	12.69	18.56	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	4.33
26N	Top	1517	120.4	87.54	285.14	93.59	0.00	44.69	2166.10	5820.10	13949.00	53573.69	30632.52	1.29	1.00	6.77
	Bottom	1517	127.62	0	0	93.59	19.86	0.00	2166.10	5820.10	13949.00	53573.69	30632.52	1.29	1.00	7.09
27N	Top	1519	231.3	101.15	160.65	104.76	41.69	0.00	1959.60	5390.00	11910.80	63775.61	40064.05	1.29	1.00	4.69
	Bottom	1711	236.59	57.22	75	104.76	23.76	2.86	1959.60	5390.00	11910.80	63775.61	40064.05	1.29	1.00	5.05
28N	Top	1521	232.66	43.13	189.1	103.22	24.20	59.94	1961.00	5390.00	11910.80	66899.22	42026.32	1.29	1.00	4.67
	Bottom	1713	237.85	24.35	79.31	103.22	13.65	30.06	1961.00	5390.00	11910.80	66899.22	42026.32	1.29	1.00	5.13
29N	Top	1523	194.15	129.59	241.85	100.42	13.51	0.00	2063.80	5606.10	12927.50	58454.03	34974.38	1.29	1.00	5.76
	Bottom	1523	200.32	0	0	100.42	0.00	9.20	2063.80	5606.10	12927.50	58454.03	34974.38	1.29	1.00	6.34



Made By: GHD  
 Checked By: CTG

Date: 4/10/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					Rating Factor		
			Dead Load			3F1 (Max P)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips	IMPACT	Condition Equation	Opr.
30N	Top	1525	261.42	57.7	116.49	96.58	6.69	44.92	1797.90	4896.30	11154.20	68492.86	42535.26	1.28	1.00	4.74
	Bottom	1525	265.73	26.48	46.58	96.58	6.37	25.64	1797.90	4896.30	11154.20	68492.86	42535.26	1.28	1.00	4.98
31N	Top	1527	261.87	94.44	135.17	99.50	28.40	10.07	1799.50	4896.30	11154.20	73706.03	45772.73	1.28	1.00	4.45
	Bottom	1527	266.05	60.56	66.18	99.50	18.90	10.50	1799.50	4896.30	11154.20	73706.03	45772.73	1.28	1.00	4.68
32N	Top	1529	225.84	282.11	524.59	98.21	1.61	44.56	2356.50	6465.40	15025.20	107045.31	62632.32	1.27	1.00	6.22
	Bottom	1715	232.56	136.23	185.22	98.21	2.90	20.11	2356.50	6465.40	15025.20	107045.31	62632.32	1.27	1.00	6.90
33N	Top	1531	379.21	184.85	128.61	109.32	47.14	15.74	2361.80	6465.40	15025.20	133600.12	78169.57	1.27	1.00	4.94
	Bottom	1531	384.33	76.26	80.69	109.32	19.00	27.53	2361.80	6465.40	15025.20	133600.12	78169.57	1.27	1.00	5.45
34N	Top	1533	131.26	14	14.77	96.58	24.00	0.00	1534.00	4157.90	9123.20	52023.88	33933.53	1.28	1.00	4.61
	Bottom	1533	135.17	4.53	12.21	96.58	17.96	2.53	1534.00	4157.90	9123.20	52023.88	33933.53	1.28	1.00	4.69
35N	Top	1535	511.09	129.11	300.23	111.45	0.00	62.20	3478.90	8893.90	25654.00	113183.93	49191.86	1.24	1.00	8.34
	Bottom	1535	521.9	0	0	111.45	42.10	0.00	3478.90	8893.90	25654.00	113183.93	49191.86	1.24	1.00	8.14
36N	Top	1537	495.35	270.55	260.94	123.15	123.30	0.00	3521.30	8893.90	25654.00	257873.87	112076.82	1.25	1.00	5.75
	Bottom	1537	506.16	0	0	123.15	0.00	71.76	3521.30	8893.90	25654.00	257873.87	112076.82	1.25	1.00	7.92
14S	Top	1494	116.09	10.88	385.88	84.57	22.39	125.58	2135.60	5807.40	15091.10	181009.38	68088.58	1.27	1.00	6.23
	Bottom	1494	119.09	7.4	140.37	84.57	33.70	48.55	2135.60	5807.40	15091.10	181009.38	68088.58	1.27	1.00	6.80
15S	Top	1496	160.38	3.92	370.27	98.00	0.00	0.00	1876.40	5258.80	11036.20	111596.94	74298.51	1.29	1.00	5.79
	Bottom	1702	163.63	3.13	189.61	98.00	13.66	17.16	1876.40	5258.80	11036.20	111596.94	74298.51	1.29	1.00	5.48
16S	Top	1498	205.01	1.11	263.82	104.74	0.00	58.43	1875.30	5258.80	11036.20	103983.04	69229.36	1.29	1.00	4.83
	Bottom	1704	208.35	6.22	100.38	104.74	13.91	26.97	1875.30	5258.80	11036.20	103983.04	69229.36	1.29	1.00	4.95
17S	Top	1500	149.75	15.08	374.44	102.80	0.00	0.00	1871.40	5258.80	11036.20	82440.03	54886.55	1.29	1.00	5.53
	Bottom	1706	153.7	2.93	179.58	102.80	5.32	20.45	1871.40	5258.80	11036.20	82440.03	54886.55	1.29	1.00	5.39
18S	Top	1502	184.51	14.84	153.58	104.23	1.71	20.38	1649.00	4376.30	10124.90	73112.04	45014.22	1.29	1.00	4.53
	Bottom	1708	187.99	6.51	63.06	104.23	0.00	8.90	1649.00	4376.30	10124.90	73112.04	45014.22	1.29	1.00	4.71
19S	Top	1504	195.09	2.18	166.59	108.25	0.00	0.00	1647.80	4376.30	10124.90	68624.16	42251.08	1.29	1.00	4.50
	Bottom	1710	198.94	2.13	85.64	108.25	3.14	16.06	1647.80	4376.30	10124.90	68624.16	42251.08	1.29	1.00	4.38
20S	Top	1506	165.32	93.06	516.07	96.95	0.00	7.79	2173.60	6411.00	13022.80	61419.65	41623.62	1.28	1.00	6.61
	Bottom	1506	171.7	0	0	96.95	47.01	0.00	2173.60	6411.00	13022.80	61419.65	41623.62	1.28	1.00	6.22
21S	Top	1508	282.96	5.36	211.45	122.35	37.64	26.32	2621.60	7258.20	17136.00	103760.01	58906.39	1.27	1.00	5.73
	Bottom	1508	289.48	2.89	109.33	122.35	0.30	48.04	2621.60	7258.20	17136.00	103760.01	58906.39	1.27	1.00	6.22
22S	Top	1510	282.09	144.25	318.81	120.26	15.30	78.73	2734.80	7465.90	18178.40	120621.95	65891.76	1.27	1.00	5.89
	Bottom	1510	288.66	47.23	162.26	120.26	4.30	32.50	2734.80	7465.90	18178.40	120621.95	65891.76	1.27	1.00	6.61





Made By: GHD  
 Checked By: CTG

Date: 4/10/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					Rating Factor		
			Dead Load			3F1 (Max P)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips	IMPACT	Condition Equation	Opr.
23S	Top	1512	119.85	95.65	625.15	96.50	0.00	0.00	2818.40	7672.50	19226.80	73711.90	38813.92	1.28	1.00	9.32
	Bottom	1512	129	0	0	96.50	42.98	99.86	2818.40	7672.50	19226.80	73711.90	38813.92	1.28	1.00	161.28
24S	Top	1514	177.76	19.75	46.14	103.41	23.99	5.43	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	101.05
	Bottom	1514	182.39	4.2	23.57	103.41	44.09	2.00	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	4.51
25S	Top	1516	173.51	1.43	80	100.26	12.73	15.69	1704.20	6550.20	10846.40	44067.05	28571.79	1.29	1.00	4.91
	Bottom	1516	178.18	4.73	39.84	100.26	21.93	29.80	1704.20	6550.20	10846.40	44067.05	28571.79	1.29	1.00	4.70
26S	Top	1518	135.33	120.24	245.35	91.78	0.00	0.00	2162.40	5820.10	13949.00	49673.65	28402.55	1.28	1.00	7.35
	Bottom	1518	142.8	0	0	91.78	41.84	7.90	2162.40	5820.10	13949.00	49673.65	28402.55	1.28	1.00	111.80
27S	Top	1520	216.4	48.11	194.5	119.91	9.15	0.00	1959.00	5390.00	11910.80	62461.78	39238.70	1.28	1.00	4.70
	Bottom	1712	221.73	29.6	85.42	119.91	0.69	14.54	1959.00	5390.00	11910.80	62461.78	39238.70	1.28	1.00	4.80
28S	Top	1522	218.96	101.84	156.84	121.21	0.00	44.59	1960.40	5390.00	11910.80	65488.22	41139.92	1.28	1.00	4.45
	Bottom	1714	224.19	54.69	70.48	121.21	5.71	16.92	1960.40	5390.00	11910.80	65488.22	41139.92	1.28	1.00	4.64
29S	Top	1524	158.65	107.95	263.55	101.48	0.00	0.00	2065.70	5606.10	12927.50	61732.28	36935.84	1.28	1.00	6.20
	Bottom	1524	164.69	0	0	101.48	11.82	41.64	2065.70	5606.10	12927.50	61732.28	36935.84	1.28	1.00	5.90
30S	Top	1526	240.32	79.03	115.07	108.00	9.80	26.42	1800.70	4896.30	11154.20	78305.20	48628.90	1.28	1.00	4.42
	Bottom	1526	244.39	40.1	51.65	108.00	8.73	6.63	1800.70	4896.30	11154.20	78305.20	48628.90	1.28	1.00	4.65
31S	Top	1528	241.39	73.07	130.24	100.54	10.20	22.21	1800.80	4896.30	11154.20	78427.17	48704.65	1.28	1.00	4.74
	Bottom	1528	245.46	46.95	55.51	100.54	13.00	36.32	1800.80	4896.30	11154.20	78427.17	48704.65	1.28	1.00	4.67
32S	Top	1530	130.23	70.87	25.89	91.68	26.84	9.53	1537.70	4157.90	9123.20	63164.35	41200.11	1.29	1.00	4.60
	Bottom	1530	133.84	47.56	5.65	91.68	41.07	12.25	1537.70	4157.90	9123.20	63164.35	41200.11	1.29	1.00	4.39
33S	Top	1532	334.39	105.09	1.34	102.92	3.81	0.00	1536.50	4157.90	9123.20	59113.10	38557.61	1.26	1.00	3.68
	Bottom	1532	338.06	24.43	13.98	102.92	30.72	11.17	1536.50	4157.90	9123.20	59113.10	38557.61	1.26	1.00	3.40
34S	Top	1534	109.45	150.18	187.79	94.66	9.38	22.46	2167.10	5582.10	13792.50	117071.73	65947.54	1.28	1.00	6.76
	Bottom	1534	114.29	64.5	98.73	94.66	15.93	44.77	2167.10	5582.10	13792.50	117071.73	65947.54	1.28	1.00	6.56
35S	Top	1536	441.13	282.31	288.88	115.86	0.00	69.18	3504.10	8893.90	25654.00	169625.93	73722.61	1.25	1.00	8.01
	Bottom	1536	450.3	0	0	115.86	136.71	0.00	3504.10	8893.90	25654.00	169625.93	73722.61	1.25	1.00	6.31
36S	Top	1538	456.54	144.69	320.16	106.62	54.76	0.00	3521.50	8893.90	25654.00	258957.37	112547.73	1.24	1.00	8.11
	Bottom	1538	465.71	0	0	106.62	0.00	93.93	3521.50	8893.90	25654.00	258957.37	112547.73	1.24	1.00	9.08



Made By: GHD  
 Checked By: CTG

Date: 4/10/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					Rating Factor		
			Dead Load			3F1 (Max My)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips	IMPACT	Condition Equation	Opr.
14N	Top	1493	129.11	13.37	437.53	74.58	17.71	44.07	2135.80	5807.40	15091.10	183481.77	69018.60	1.27	1.00	7.79
	Bottom	1493	132.1	4.35	159.87	74.58	15.76	17.35	2135.80	5807.40	15091.10	183481.77	69018.60	1.27	1.00	8.45
15N	Top	1495	181.85	2.99	421.78	102.66	26.33	0.00	1876.90	5258.80	11036.20	116218.33	77375.32	1.29	1.00	4.94
	Bottom	1701	185.03	3.8	215.55	99.83	22.19	11.77	1876.90	5258.80	11036.20	116218.33	77375.32	1.29	1.00	5.18
16N	Top	1497	222.8	10.55	290.01	102.38	28.72	8.73	1876.40	5258.80	11036.20	112015.10	74576.91	1.29	1.00	4.74
	Bottom	1703	226.03	1.25	108.23	102.38	23.22	3.96	1876.40	5258.80	11036.20	112015.10	74576.91	1.29	1.00	4.99
17N	Top	1499	171.07	17.61	426.06	95.68	25.35	0.00	1873.80	5258.80	11036.20	94713.82	63058.14	1.29	1.00	5.27
	Bottom	1705	174.8	12.91	203.46	95.68	18.05	9.48	1873.80	5258.80	11036.20	94713.82	63058.14	1.29	1.00	5.48
18N	Top	1501	199.29	1.69	171.13	94.01	35.07	14.61	1651.50	4376.30	10124.90	84953.56	52304.90	1.29	1.00	4.42
	Bottom	1707	202.56	0.06	68.13	94.01	22.60	7.06	1651.50	4376.30	10124.90	84953.56	52304.90	1.29	1.00	4.74
19N	Top	1503	211.59	10.59	185.03	84.21	23.32	0.00	1650.40	4376.30	10124.90	79352.66	48856.49	1.29	1.00	5.12
	Bottom	1709	215.21	8.7	96.02	101.18	17.47	10.82	1650.40	4376.30	10124.90	79352.66	48856.49	1.29	1.00	4.40
20N	Top	1505	183.75	49.06	435.19	0.00	16.81	0.00	2349.90	6465.40	15025.20	85984.74	50309.76	1.28	1.00	117.46
	Bottom	1505	189.82	0	0	51.93	45.35	0.00	2349.90	6465.40	15025.20	85984.74	50309.76	1.28	1.00	11.02
21N	Top	1507	372.95	55.44	36.51	98.21	67.47	8.87	2278.20	5791.70	14821.40	128698.63	69474.54	1.26	1.00	5.10
	Bottom	1507	377.77	27.53	29.74	98.21	41.58	24.78	2278.20	5791.70	14821.40	128698.63	69474.54	1.26	1.00	5.47
22N	Top	1509	300.78	113.72	111.65	89.72	57.94	64.25	2134.60	6038.60	12978.30	88759.06	56897.31	1.27	1.00	4.98
	Bottom	1509	305.69	26.32	71.96	76.71	42.16	164.58	2134.60	6038.60	12978.30	88759.06	56897.31	1.27	1.00	5.18
23N	Top	1511	104.65	2.86	41.58	41.93	17.64	0.00	1634.10	4376.30	10124.90	40198.84	24749.95	1.30	1.00	10.86
	Bottom	1511	108.67	0	0	74.83	18.79	5.62	1634.10	4376.30	10124.90	40198.84	24749.95	1.30	1.00	6.40
24N	Top	1513	203.13	16.61	52.8	67.17	10.23	0.00	1707.60	6550.20	10846.40	49478.05	32080.12	1.29	1.00	7.29
	Bottom	1513	207.56	1.75	22.77	98.04	27.14	13.31	1707.60	6550.20	10846.40	49478.05	32080.12	1.29	1.00	4.76
25N	Top	1515	209.86	18.58	68.68	108.69	18.13	11.93	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	4.36
	Bottom	1515	214.33	13.96	39	109.77	12.79	23.62	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	4.31
26N	Top	1517	120.4	87.54	285.14	40.44	13.17	0.83	2166.10	5820.10	13949.00	53573.69	30632.52	1.29	1.00	14.97
	Bottom	1517	127.62	0	0	52.64	58.58	0.00	2166.10	5820.10	13949.00	53573.69	30632.52	1.29	1.00	9.55
27N	Top	1519	231.3	101.15	160.65	98.39	43.03	0.00	1959.60	5390.00	11910.80	63775.61	40064.05	1.29	1.00	4.93
	Bottom	1711	236.59	57.22	75	102.77	24.14	15.10	1959.60	5390.00	11910.80	63775.61	40064.05	1.29	1.00	5.04
28N	Top	1521	232.66	43.13	189.1	91.60	35.08	33.23	1961.00	5390.00	11910.80	66899.22	42026.32	1.29	1.00	5.19
	Bottom	1713	237.85	24.35	79.31	91.60	20.18	18.08	1961.00	5390.00	11910.80	66899.22	42026.32	1.29	1.00	5.69
29N	Top	1523	194.15	129.59	241.85	43.12	64.91	0.00	2063.80	5606.10	12927.50	58454.03	34974.38	1.29	1.00	9.00
	Bottom	1523	200.32	0	0	0.00	2.76	0.00	2063.80	5606.10	12927.50	58454.03	34974.38	1.29	1.00	633.68



Made By: GHD  
 Checked By: CTG

Date: 4/10/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					Rating Factor		
			Dead Load			3F1 (Max My)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips	IMPACT	Condition Equation	Opr.
30N	Top	1525	261.42	57.7	116.49	61.64	20.43	65.43	1797.90	4896.30	11154.20	68492.86	42535.26	1.28	1.00	6.31
	Bottom	1525	265.73	26.48	46.58	61.64	38.43	30.85	1797.90	4896.30	11154.20	68492.86	42535.26	1.28	1.00	6.34
31N	Top	1527	261.87	94.44	135.17	70.75	42.70	28.32	1799.50	4896.30	11154.20	73706.03	45772.73	1.28	1.00	5.45
	Bottom	1527	266.05	60.56	66.18	78.81	24.56	54.83	1799.50	4896.30	11154.20	73706.03	45772.73	1.28	1.00	5.23
32N	Top	1529	225.84	282.11	524.59	95.85	20.70	0.00	2356.50	6465.40	15025.20	107045.31	62632.32	1.27	1.00	6.37
	Bottom	1715	232.56	136.23	185.22	59.31	25.47	90.82	2356.50	6465.40	15025.20	107045.31	62632.32	1.27	1.00	8.49
33N	Top	1531	379.21	184.85	128.61	90.00	99.96	45.87	2361.80	6465.40	15025.20	133600.12	78169.57	1.27	1.00	4.76
	Bottom	1531	384.33	76.26	80.69	90.00	62.08	100.07	2361.80	6465.40	15025.20	133600.12	78169.57	1.27	1.00	5.11
34N	Top	1533	131.26	14	14.77	52.92	36.61	21.89	1534.00	4157.90	9123.20	52023.88	33933.53	1.28	1.00	6.91
	Bottom	1533	135.17	4.53	12.21	71.50	19.44	31.66	1534.00	4157.90	9123.20	52023.88	33933.53	1.28	1.00	5.78
35N	Top	1535	511.09	129.11	300.23	85.59	130.48	0.00	3478.90	8893.90	25654.00	113183.93	49191.86	1.24	1.00	7.29
	Bottom	1535	521.9	0	0	94.73	142.68	0.00	3478.90	8893.90	25654.00	113183.93	49191.86	1.24	1.00	6.89
36N	Top	1537	495.35	270.55	260.94	120.96	130.64	0.00	3521.30	8893.90	25654.00	257873.87	112076.82	1.25	1.00	5.73
	Bottom	1537	506.16	0	0	60.06	49.92	0.00	3521.30	8893.90	25654.00	257873.87	112076.82	1.25	1.00	13.19
14S	Top	1494	116.09	10.88	385.88	71.19	22.58	40.56	2135.60	5807.40	15091.10	181009.38	68088.58	1.27	1.00	8.10
	Bottom	1494	119.09	7.4	140.37	71.19	36.25	15.78	2135.60	5807.40	15091.10	181009.38	68088.58	1.27	1.00	8.14
15S	Top	1496	160.38	3.92	370.27	39.84	8.65	0.00	1876.40	5258.80	11036.20	111596.94	74298.51	1.29	1.00	13.21
	Bottom	1702	163.63	3.13	189.61	95.35	13.75	11.16	1876.40	5258.80	11036.20	111596.94	74298.51	1.29	1.00	5.68
16S	Top	1498	205.01	1.11	263.82	32.49	6.47	92.02	1875.30	5258.80	11036.20	103983.04	69229.36	1.29	1.00	1362.39
	Bottom	1704	208.35	6.22	100.38	98.31	17.21	3.29	1875.30	5258.80	11036.20	103983.04	69229.36	1.29	1.00	5.39
17S	Top	1500	149.75	15.08	374.44	34.55	1.90	0.00	1871.40	5258.80	11036.20	82440.03	54886.55	1.29	1.00	16.12
	Bottom	1706	153.7	2.93	179.58	16.67	17.25	59.53	1871.40	5258.80	11036.20	82440.03	54886.55	1.29	1.00	17.62
18S	Top	1502	184.51	14.84	153.58	103.81	1.91	35.88	1649.00	4376.30	10124.90	73112.04	45014.22	1.29	1.00	4.44
	Bottom	1708	187.99	6.51	63.06	14.30	3.66	0.76	1649.00	4376.30	10124.90	73112.04	45014.22	1.29	1.00	31.42
19S	Top	1504	195.09	2.18	166.59	44.09	6.65	0.00	1647.80	4376.30	10124.90	68624.16	42251.08	1.29	1.00	10.43
	Bottom	1710	198.94	2.13	85.64	0.18	4.37	0.00	1647.80	4376.30	10124.90	68624.16	42251.08	1.29	1.00	267.82
20S	Top	1506	165.32	93.06	516.07	0.00	5.12	0.00	2173.60	6411.00	13022.80	61419.65	41623.62	1.28	1.00	374.50
	Bottom	1506	171.7	0	0	95.86	49.04	0.00	2173.60	6411.00	13022.80	61419.65	41623.62	1.28	1.00	6.24
21S	Top	1508	282.96	5.36	211.45	122.29	43.20	16.47	2621.60	7258.20	17136.00	103760.01	58906.39	1.27	1.00	5.71
	Bottom	1508	289.48	2.89	109.33	59.79	15.23	37.25	2621.60	7258.20	17136.00	103760.01	58906.39	1.27	1.00	11.34
22S	Top	1510	282.09	144.25	318.81	88.90	41.22	224.77	2734.80	7465.90	18178.40	120621.95	65891.76	1.27	1.00	5.86
	Bottom	1510	288.66	47.23	162.26	94.67	53.46	104.25	2734.80	7465.90	18178.40	120621.95	65891.76	1.27	1.00	6.42



Made By: GHD  
 Checked By: CTG

Date: 4/10/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					Rating Factor		
			Dead Load			3F1 (Max My)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips	IMPACT	Condition Equation	Opr.
23S	Top	1512	119.85	95.65	625.15	64.28	65.67	0.00	2818.40	7672.50	19226.80	73711.90	38813.92	1.28	1.00	573.61
	Bottom	1512	129	0	0	91.84	51.46	69.95	2818.40	7672.50	19226.80	73711.90	38813.92	1.28	1.00	164.16
24S	Top	1514	177.76	19.75	46.14	103.41	23.99	5.43	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	4.70
	Bottom	1514	182.39	4.2	23.57	90.66	45.15	12.13	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	4.98
25S	Top	1516	173.51	1.43	80	90.44	17.62	13.58	1704.20	6550.20	10846.40	44067.05	28571.79	1.29	1.00	5.35
	Bottom	1516	178.18	4.73	39.84	90.44	31.98	25.68	1704.20	6550.20	10846.40	44067.05	28571.79	1.29	1.00	5.06
26S	Top	1518	135.33	120.24	245.35	0.00	2.76	0.00	2162.40	5820.10	13949.00	49673.65	28402.55	1.28	1.00	657.16
	Bottom	1518	142.8	0	0	52.24	68.81	0.00	2162.40	5820.10	13949.00	49673.65	28402.55	1.28	1.00	9.05
27S	Top	1520	216.4	48.11	194.5	88.80	37.57	0.00	1959.00	5390.00	11910.80	62461.78	39238.70	1.28	1.00	292.08
	Bottom	1712	221.73	29.6	85.42	88.80	19.52	54.04	1959.00	5390.00	11910.80	62461.78	39238.70	1.28	1.00	5.59
28S	Top	1522	218.96	101.84	156.84	61.13	8.17	229.82	1960.40	5390.00	11910.80	65488.22	41139.92	1.28	1.00	453.47
	Bottom	1714	224.19	54.69	70.48	103.14	21.98	49.53	1960.40	5390.00	11910.80	65488.22	41139.92	1.28	1.00	4.89
29S	Top	1524	158.65	107.95	263.55	43.99	77.94	0.00	2065.70	5606.10	12927.50	61732.28	36935.84	1.28	1.00	8.59
	Bottom	1524	164.69	0	0	87.24	16.71	20.13	2065.70	5606.10	12927.50	61732.28	36935.84	1.28	1.00	6.87
30S	Top	1526	240.32	79.03	115.07	77.87	27.50	86.36	1800.70	4896.30	11154.20	78305.20	48628.90	1.28	1.00	5.01
	Bottom	1526	244.39	40.1	51.65	72.62	48.47	38.41	1800.70	4896.30	11154.20	78305.20	48628.90	1.28	1.00	5.38
31S	Top	1528	241.39	73.07	130.24	77.78	49.04	39.14	1800.80	4896.30	11154.20	78427.17	48704.65	1.28	1.00	4.99
	Bottom	1528	245.46	46.95	55.51	72.57	25.91	82.66	1800.80	4896.30	11154.20	78427.17	48704.65	1.28	1.00	5.43
32S	Top	1530	130.23	70.87	25.89	48.16	36.53	69.16	1537.70	4157.90	9123.20	63164.35	41200.11	1.29	1.00	6.45
	Bottom	1530	133.84	47.56	5.65	48.16	75.34	33.76	1537.70	4157.90	9123.20	63164.35	41200.11	1.29	1.00	5.84
33S	Top	1532	334.39	105.09	1.34	65.41	44.68	25.54	1536.50	4157.90	9123.20	59113.10	38557.61	1.26	1.00	4.43
	Bottom	1532	338.06	24.43	13.98	87.22	68.75	21.78	1536.50	4157.90	9123.20	59113.10	38557.61	1.26	1.00	3.38
34S	Top	1534	109.45	150.18	187.79	49.13	116.24	67.92	2167.10	5582.10	13792.50	117071.73	65947.54	1.28	1.00	6.54
	Bottom	1534	114.29	64.5	98.73	55.16	39.99	128.62	2167.10	5582.10	13792.50	117071.73	65947.54	1.28	1.00	7.76
35S	Top	1536	441.13	282.31	288.88	50.33	45.77	0.00	3504.10	8893.90	25654.00	169625.93	73722.61	1.25	1.00	14.67
	Bottom	1536	450.3	0	0	114.00	148.69	0.00	3504.10	8893.90	25654.00	169625.93	73722.61	1.25	1.00	6.20
36S	Top	1538	456.54	144.69	320.16	87.76	156.60	0.00	3521.50	8893.90	25654.00	258957.37	112547.73	1.24	1.00	6.94
	Bottom	1538	465.71	0	0	80.56	149.83	0.00	3521.50	8893.90	25654.00	258957.37	112547.73	1.24	1.00	7.75



Made By: GHD  
 Checked By: CTG

Date: 4/10/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					Rating Factor		
			Dead Load			3F1 (Max Mz)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips	IMPACT	Condition Equation	Opr.
14N	Top	1493	129.11	13.37	437.53	52.35	0.00	262.94	2135.80	5807.40	15091.10	183481.77	69018.60	1.27	1.00	7.56
	Bottom	1493	132.1	4.35	159.87	52.35	3.32	102.72	2135.80	5807.40	15091.10	183481.77	69018.60	1.27	1.00	10.25
15N	Top	1495	181.85	2.99	421.78	31.80	9.83	3.37	1876.90	5258.80	11036.20	116218.33	77375.32	1.29	1.00	15.41
	Bottom	1701	185.03	3.8	215.55	68.35	3.51	63.84	1876.90	5258.80	11036.20	116218.33	77375.32	1.29	1.00	7.05
16N	Top	1497	222.8	10.55	290.01	86.58	0.00	209.89	1876.40	5258.80	11036.20	112015.10	74576.91	1.29	1.00	4.41
	Bottom	1703	226.03	1.25	108.23	86.58	5.27	97.45	1876.40	5258.80	11036.20	112015.10	74576.91	1.29	1.00	5.28
17N	Top	1499	171.07	17.61	426.06	0.00	0.05	22.35	1873.80	5258.80	11036.20	94713.82	63058.14	1.29	1.00	144.62
	Bottom	1705	174.8	12.91	203.46	96.64	25.44	102.32	1873.80	5258.80	11036.20	94713.82	63058.14	1.29	1.00	4.61
18N	Top	1501	199.29	1.69	171.13	64.53	0.00	127.82	1651.50	4376.30	10124.90	84953.56	52304.90	1.29	1.00	5.66
	Bottom	1707	202.56	0.06	68.13	64.53	0.97	58.35	1651.50	4376.30	10124.90	84953.56	52304.90	1.29	1.00	6.60
19N	Top	1503	211.59	10.59	185.03	0.00	0.20	6.12	1650.40	4376.30	10124.90	79352.66	48856.49	1.29	1.00	442.31
	Bottom	1709	215.21	8.7	96.02	65.06	3.27	53.16	1650.40	4376.30	10124.90	79352.66	48856.49	1.29	1.00	6.41
20N	Top	1505	183.75	49.06	435.19	57.53	0.00	329.46	2349.90	6465.40	15025.20	85984.74	50309.76	1.28	1.00	6.51
	Bottom	1505	189.82	0	0	0.00	0.00	100.89	2349.90	6465.40	15025.20	85984.74	50309.76	1.28	1.00	47.75
21N	Top	1507	372.95	55.44	36.51	80.42	9.07	212.72	2278.20	5791.70	14821.40	128698.63	69474.54	1.26	1.00	5.50
	Bottom	1507	377.77	27.53	29.74	73.86	22.88	224.94	2278.20	5791.70	14821.40	128698.63	69474.54	1.26	1.00	5.48
22N	Top	1509	300.78	113.72	111.65	76.45	16.89	118.40	2134.60	6038.60	12978.30	88759.06	56897.31	1.27	1.00	5.90
	Bottom	1509	305.69	26.32	71.96	76.71	42.16	164.58	2134.60	6038.60	12978.30	88759.06	56897.31	1.27	1.00	5.18
23N	Top	1511	104.65	2.86	41.58	0.00	0.00	46.15	1634.10	4376.30	10124.90	40198.84	24749.95	1.30	1.00	70.69
	Bottom	1511	108.67	0	0	41.93	0.00	91.90	1634.10	4376.30	10124.90	40198.84	24749.95	1.30	1.00	9.23
24N	Top	1513	203.13	16.61	52.8	73.10	9.29	45.15	1707.60	6550.20	10846.40	49478.05	32080.12	1.29	1.00	6.14
	Bottom	1513	207.56	1.75	22.77	79.57	20.22	22.18	1707.60	6550.20	10846.40	49478.05	32080.12	1.29	1.00	5.77
25N	Top	1515	209.86	18.58	68.68	93.72	16.34	18.01	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	4.99
	Bottom	1515	214.33	13.96	39	93.72	10.20	38.53	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	4.91
26N	Top	1517	120.4	87.54	285.14	52.64	0.00	170.22	2166.10	5820.10	13949.00	53573.69	30632.52	1.29	1.00	8.51
	Bottom	1517	127.62	0	0	0.00	0.00	6.94	2166.10	5820.10	13949.00	53573.69	30632.52	1.29	1.00	662.00
27N	Top	1519	231.3	101.15	160.65	78.84	30.96	31.62	1959.60	5390.00	11910.80	63775.61	40064.05	1.29	1.00	5.90
	Bottom	1711	236.59	57.22	75	80.15	21.42	44.15	1959.60	5390.00	11910.80	63775.61	40064.05	1.29	1.00	6.03
28N	Top	1521	232.66	43.13	189.1	91.54	0.00	98.39	1961.00	5390.00	11910.80	66899.22	42026.32	1.29	1.00	5.28
	Bottom	1713	237.85	24.35	79.31	91.54	11.00	46.42	1961.00	5390.00	11910.80	66899.22	42026.32	1.29	1.00	5.62
29N	Top	1523	194.15	129.59	241.85	77.63	6.17	8.55	2063.80	5606.10	12927.50	58454.03	34974.38	1.29	1.00	7.46
	Bottom	1523	200.32	0	0	43.12	0.00	145.99	2063.80	5606.10	12927.50	58454.03	34974.38	1.29	1.00	9.59



Made By: GHD  
 Checked By: CTG

Date: 4/10/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					IMPACT	Condition Equation	Rating Factor Opr.
			Dead Load			3F1 (Max Mz)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips			
30N	Top	1525	261.42	57.7	116.49	71.05	18.78	70.55	1797.90	4896.30	11154.20	68492.86	42535.26	1.28	1.00	5.63
	Bottom	1525	265.73	26.48	46.58	75.17	32.72	33.98	1797.90	4896.30	11154.20	68492.86	42535.26	1.28	1.00	5.53
31N	Top	1527	261.87	94.44	135.17	61.79	41.46	30.62	1799.50	4896.30	11154.20	73706.03	45772.73	1.28	1.00	6.05
	Bottom	1527	266.05	60.56	66.18	61.79	23.19	68.23	1799.50	4896.30	11154.20	73706.03	45772.73	1.28	1.00	6.21
32N	Top	1529	225.84	282.11	524.59	65.14	0.00	259.50	2356.50	6465.40	15025.20	107045.31	62632.32	1.27	1.00	6.18
	Bottom	1715	232.56	136.23	185.22	65.14	25.38	91.16	2356.50	6465.40	15025.20	107045.31	62632.32	1.27	1.00	7.93
33N	Top	1531	379.21	184.85	128.61	70.39	26.37	61.12	2361.80	6465.40	15025.20	133600.12	78169.57	1.27	1.00	7.10
	Bottom	1531	384.33	76.26	80.69	90.00	62.08	100.07	2361.80	6465.40	15025.20	133600.12	78169.57	1.27	1.00	5.11
34N	Top	1533	131.26	14	14.77	0.00	7.47	24.27	1534.00	4157.90	9123.20	52023.88	33933.53	1.28	1.00	70.96
	Bottom	1533	135.17	4.53	12.21	44.27	17.17	45.92	1534.00	4157.90	9123.20	52023.88	33933.53	1.28	1.00	8.29
35N	Top	1535	511.09	129.11	300.23	94.73	0.00	140.50	3478.90	8893.90	25654.00	113183.93	49191.86	1.24	1.00	8.73
	Bottom	1535	521.9	0	0	72.73	0.00	92.71	3478.90	8893.90	25654.00	113183.93	49191.86	1.24	1.00	12.15
36N	Top	1537	495.35	270.55	260.94	70.27	0.00	50.43	3521.30	8893.90	25654.00	257873.87	112076.82	1.25	1.00	12.81
	Bottom	1537	506.16	0	0	108.51	0.00	103.55	3521.30	8893.90	25654.00	257873.87	112076.82	1.25	1.00	8.58
14S	Top	1494	116.09	10.88	385.88	49.92	3.24	246.36	2135.60	5807.40	15091.10	181009.38	68088.58	1.27	1.00	7.99
	Bottom	1494	119.09	7.4	140.37	49.92	0.00	95.04	2135.60	5807.40	15091.10	181009.38	68088.58	1.27	1.00	11.11
15S	Top	1496	160.38	3.92	370.27	30.24	0.00	3.67	1876.40	5258.80	11036.20	111596.94	74298.51	1.29	1.00	18.38
	Bottom	1702	163.63	3.13	189.61	64.99	0.00	61.60	1876.40	5258.80	11036.20	111596.94	74298.51	1.29	1.00	7.67
16S	Top	1498	205.01	1.11	263.82	85.11	1.64	198.71	1875.30	5258.80	11036.20	103983.04	69229.36	1.29	1.00	4.62
	Bottom	1704	208.35	6.22	100.38	85.11	0.00	92.08	1875.30	5258.80	11036.20	103983.04	69229.36	1.29	1.00	5.60
17S	Top	1500	149.75	15.08	374.44	0.00	0.00	21.14	1871.40	5258.80	11036.20	82440.03	54886.55	1.29	1.00	158.19
	Bottom	1706	153.7	2.93	179.58	40.19	0.00	104.07	1871.40	5258.80	11036.20	82440.03	54886.55	1.29	1.00	10.03
18S	Top	1502	184.51	14.84	153.58	68.33	0.00	137.25	1649.00	4376.30	10124.90	73112.04	45014.22	1.29	1.00	5.37
	Bottom	1708	187.99	6.51	63.06	68.33	2.04	63.28	1649.00	4376.30	10124.90	73112.04	45014.22	1.29	1.00	6.25
19S	Top	1504	195.09	2.18	166.59	0.00	0.18	4.85	1647.80	4376.30	10124.90	68624.16	42251.08	1.29	1.00	564.75
	Bottom	1710	198.94	2.13	85.64	73.02	1.69	62.07	1647.80	4376.30	10124.90	68624.16	42251.08	1.29	1.00	5.84
20S	Top	1506	165.32	93.06	516.07	58.58	0.00	335.96	2173.60	6411.00	13022.80	61419.65	41623.62	1.28	1.00	5.60
	Bottom	1506	171.7	0	0	0.00	0.00	48.72	2173.60	6411.00	13022.80	61419.65	41623.62	1.28	1.00	86.23
21S	Top	1508	282.96	5.36	211.45	75.83	9.55	79.08	2621.60	7258.20	17136.00	103760.01	58906.39	1.27	1.00	525.28
	Bottom	1508	289.48	2.89	109.33	101.88	10.92	140.40	2621.60	7258.20	17136.00	103760.01	58906.39	1.27	1.00	6.31
22S	Top	1510	282.09	144.25	318.81	94.67	41.16	225.20	2734.80	7465.90	18178.40	120621.95	65891.76	1.27	1.00	5.62
	Bottom	1510	288.66	47.23	162.26	66.90	16.22	127.90	2734.80	7465.90	18178.40	120621.95	65891.76	1.27	1.00	9.04



Made By: GHD  
 Checked By: CTG

Date: 4/10/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					Rating Factor		
			Dead Load			3F1 (Max Mz)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips	IMPACT	Condition Equation	Opr.
23S	Top	1512	119.85	95.65	625.15	0.00	0.00	55.10	2818.40	7672.50	19226.80	73711.90	38813.92	1.28	1.00	111.30
	Bottom	1512	129	0	0	64.28	0.00	384.53	2818.40	7672.50	19226.80	73711.90	38813.92	1.28	1.00	7.79
24S	Top	1514	177.76	19.75	46.14	86.37	11.36	39.62	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	5.42
	Bottom	1514	182.39	4.2	23.57	86.37	18.24	18.81	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	5.53
25S	Top	1516	173.51	1.43	80	73.12	12.77	25.56	1704.20	6550.20	10846.40	44067.05	28571.79	1.29	1.00	6.46
	Bottom	1516	178.18	4.73	39.84	67.23	7.82	53.34	1704.20	6550.20	10846.40	44067.05	28571.79	1.29	1.00	6.68
26S	Top	1518	135.33	120.24	245.35	46.91	0.00	186.16	2162.40	5820.10	13949.00	49673.65	28402.55	1.28	1.00	8.75
	Bottom	1518	142.8	0	0	86.10	35.77	32.57	2162.40	5820.10	13949.00	49673.65	28402.55	1.28	1.00	6.76
27S	Top	1520	216.4	48.11	194.5	73.07	3.20	12.51	1959.00	5390.00	11910.80	62461.78	39238.70	1.28	1.00	7.59
	Bottom	1712	221.73	29.6	85.42	95.64	18.38	54.99	1959.00	5390.00	11910.80	62461.78	39238.70	1.28	1.00	5.27
28S	Top	1522	218.96	101.84	156.84	103.14	0.00	108.40	1960.40	5390.00	11910.80	65488.22	41139.92	1.28	1.00	4.71
	Bottom	1714	224.19	54.69	70.48	103.14	21.98	49.53	1960.40	5390.00	11910.80	65488.22	41139.92	1.28	1.00	4.89
29S	Top	1524	158.65	107.95	263.55	0.00	0.00	8.61	2065.70	5606.10	12927.50	61732.28	36935.84	1.28	1.00	456.04
	Bottom	1524	164.69	0	0	43.99	0.00	183.07	2065.70	5606.10	12927.50	61732.28	36935.84	1.28	1.00	8.97
30S	Top	1526	240.32	79.03	115.07	77.87	27.50	86.36	1800.70	4896.30	11154.20	78305.20	48628.90	1.28	1.00	5.00
	Bottom	1526	244.39	40.1	51.65	72.62	48.47	38.41	1800.70	4896.30	11154.20	78305.20	48628.90	1.28	1.00	5.38
31S	Top	1528	241.39	73.07	130.24	77.78	49.04	39.14	1800.80	4896.30	11154.20	78427.17	48704.65	1.28	1.00	4.99
	Bottom	1528	245.46	46.95	55.51	72.57	25.91	82.66	1800.80	4896.30	11154.20	78427.17	48704.65	1.28	1.00	5.43
32S	Top	1530	130.23	70.87	25.89	41.22	34.41	69.24	1537.70	4157.90	9123.20	63164.35	41200.11	1.29	1.00	404.15
	Bottom	1530	133.84	47.56	5.65	41.22	71.94	34.03	1537.70	4157.90	9123.20	63164.35	41200.11	1.29	1.00	6.48
33S	Top	1532	334.39	105.09	1.34	70.39	40.45	56.64	1536.50	4157.90	9123.20	59113.10	38557.61	1.26	1.00	4.02
	Bottom	1532	338.06	24.43	13.98	72.75	26.03	54.30	1536.50	4157.90	9123.20	59113.10	38557.61	1.26	1.00	4.30
34S	Top	1534	109.45	150.18	187.79	55.16	115.88	69.09	2167.10	5582.10	13792.50	117071.73	65947.54	1.28	1.00	459.48
	Bottom	1534	114.29	64.5	98.73	55.16	39.99	128.62	2167.10	5582.10	13792.50	117071.73	65947.54	1.28	1.00	7.76
35S	Top	1536	441.13	282.31	288.88	102.47	0.00	124.33	3504.10	8893.90	25654.00	169625.93	73722.61	1.25	1.00	8.39
	Bottom	1536	450.3	0	0	70.06	0.00	61.21	3504.10	8893.90	25654.00	169625.93	73722.61	1.25	1.00	13.66
36S	Top	1538	456.54	144.69	320.16	68.22	0.00	105.74	3521.50	8893.90	25654.00	258957.37	112547.73	1.24	1.00	12.54
	Bottom	1538	465.71	0	0	87.76	0.00	162.34	3521.50	8893.90	25654.00	258957.37	112547.73	1.24	1.00	9.84



Made By: GHD  
 Checked By: CTG

Date: 4/10/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					Rating Factor		
			Dead Load			4F1 (Max P)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips	IMPACT	Condition Equation	Opr.
14N	Top	1493	129.11	13.37	437.53	15.84	41.82	31.52	2135.80	5807.40	15091.10	183481.77	69018.60	1.27	1.00	19.04
	Bottom	1493	132.1	4.35	159.87	15.84	14.24	12.12	2135.80	5807.40	15091.10	183481.77	69018.60	1.27	1.00	30.67
15N	Top	1495	181.85	2.99	421.78	19.04	63.10	0.00	1876.90	5258.80	11036.20	116218.33	77375.32	1.29	1.00	13.27
	Bottom	1701	185.03	3.8	215.55	19.04	21.69	4.08	1876.90	5258.80	11036.20	116218.33	77375.32	1.29	1.00	20.64
16N	Top	1497	222.8	10.55	290.01	20.19	64.69	6.08	1876.40	5258.80	11036.20	112015.10	74576.91	1.29	1.00	12.17
	Bottom	1703	226.03	1.25	108.23	20.19	21.94	2.82	1876.40	5258.80	11036.20	112015.10	74576.91	1.29	1.00	19.46
17N	Top	1499	171.07	17.61	426.06	17.82	54.75	0.00	1873.80	5258.80	11036.20	94713.82	63058.14	1.29	1.00	14.73
	Bottom	1705	174.8	12.91	203.46	17.82	19.33	3.04	1873.80	5258.80	11036.20	94713.82	63058.14	1.29	1.00	22.50
18N	Top	1501	199.29	1.69	171.13	5.39	11.07	2.50	1651.50	4376.30	10124.90	84953.56	52304.90	1.29	1.00	48.42
	Bottom	1707	202.56	0.06	68.13	5.39	0.00	0.56	1651.50	4376.30	10124.90	84953.56	52304.90	1.29	1.00	89.80
19N	Top	1503	211.59	10.59	185.03	7.97	20.35	0.00	1650.40	4376.30	10124.90	79352.66	48856.49	1.29	1.00	30.31
	Bottom	1709	215.21	8.7	96.02	7.97	3.83	0.36	1650.40	4376.30	10124.90	79352.66	48856.49	1.29	1.00	50.80
20N	Top	1505	183.75	49.06	435.19	13.00	45.83	18.34	2349.90	6465.40	15025.20	85984.74	50309.76	1.28	1.00	21.93
	Bottom	1505	189.82	0	0	13.00	0.00	0.00	2349.90	6465.40	15025.20	85984.74	50309.76	1.28	1.00	58.24
21N	Top	1507	372.95	55.44	36.51	3.61	2.48	5.76	2278.20	5791.70	14821.40	128698.63	69474.54	1.26	1.00	117.35
	Bottom	1507	377.77	27.53	29.74	3.61	0.00	9.97	2278.20	5791.70	14821.40	128698.63	69474.54	1.26	1.00	125.36
22N	Top	1509	300.78	113.72	111.65	8.49	39.71	21.99	2134.60	6038.60	12978.30	88759.06	56897.31	1.27	1.00	22.95
	Bottom	1509	305.69	26.32	71.96	8.49	0.00	2.13	2134.60	6038.60	12978.30	88759.06	56897.31	1.27	1.00	70.05
23N	Top	1511	104.65	2.86	41.58	15.61	41.66	13.58	1634.10	4376.30	10124.90	40198.84	24749.95	1.30	1.00	15.68
	Bottom	1511	108.67	0	0	15.61	0.00	0.00	1634.10	4376.30	10124.90	40198.84	24749.95	1.30	1.00	34.03
24N	Top	1513	203.13	16.61	52.8	14.00	38.69	21.98	1707.60	6550.20	10846.40	49478.05	32080.12	1.29	1.00	18.29
	Bottom	1513	207.56	1.75	22.77	14.00	17.05	9.57	1707.60	6550.20	10846.40	49478.05	32080.12	1.29	1.00	25.42
25N	Top	1515	209.86	18.58	68.68	14.85	37.65	18.51	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	18.07
	Bottom	1515	214.33	13.96	39	14.85	16.84	7.70	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	24.47
26N	Top	1517	120.4	87.54	285.14	13.79	35.80	38.00	2166.10	5820.10	13949.00	53573.69	30632.52	1.29	1.00	20.45
	Bottom	1517	127.62	0	0	13.79	0.00	0.00	2166.10	5820.10	13949.00	53573.69	30632.52	1.29	1.00	52.02
27N	Top	1519	231.3	101.15	160.65	7.01	13.80	7.43	1959.60	5390.00	11910.80	63775.61	40064.05	1.29	1.00	42.23
	Bottom	1711	236.59	57.22	75	7.01	6.86	4.00	1959.60	5390.00	11910.80	63775.61	40064.05	1.29	1.00	56.29
28N	Top	1521	232.66	43.13	189.1	5.19	3.37	8.99	1961.00	5390.00	11910.80	66899.22	42026.32	1.29	1.00	71.81
	Bottom	1713	237.85	24.35	79.31	5.19	0.00	1.39	1961.00	5390.00	11910.80	66899.22	42026.32	1.29	1.00	107.17
29N	Top	1523	194.15	129.59	241.85	10.23	25.27	24.70	2063.80	5606.10	12927.50	58454.03	34974.38	1.29	1.00	25.62
	Bottom	1523	200.32	0	0	10.23	0.00	0.00	2063.80	5606.10	12927.50	58454.03	34974.38	1.29	1.00	63.22





Made By: GHD  
Checked By: CTG

Date: 4/10/2012  
Date: 4/13/2012

Job No.: P402110046  
Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					Rating Factor		
			Dead Load			4F1 (Max P)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips	IMPACT	Condition Equation	Opr.
30N	Top	1525	261.42	57.7	116.49	5.28	7.71	9.67	1797.90	4896.30	11154.20	68492.86	42535.26	1.28	1.00	51.84
	Bottom	1525	265.73	26.48	46.58	5.28	0.00	0.00	1797.90	4896.30	11154.20	68492.86	42535.26	1.28	1.00	97.46
31N	Top	1527	261.87	94.44	135.17	15.46	29.37	29.69	1799.50	4896.30	11154.20	73706.03	45772.73	1.28	1.00	15.92
	Bottom	1527	266.05	60.56	66.18	15.46	11.17	10.43	1799.50	4896.30	11154.20	73706.03	45772.73	1.28	1.00	23.77
32N	Top	1529	225.84	282.11	524.59	18.05	32.16	52.97	2356.50	6465.40	15025.20	107045.31	62632.32	1.27	1.00	17.20
	Bottom	1715	232.56	136.23	185.22	18.05	7.95	12.12	2356.50	6465.40	15025.20	107045.31	62632.32	1.27	1.00	30.84
33N	Top	1531	379.21	184.85	128.61	20.51	68.33	26.46	2361.80	6465.40	15025.20	133600.12	78169.57	1.27	1.00	12.80
	Bottom	1531	384.33	76.26	80.69	20.51	0.00	0.00	2361.80	6465.40	15025.20	133600.12	78169.57	1.27	1.00	32.12
34N	Top	1533	131.26	14	14.77	17.55	43.27	19.90	1534.00	4157.90	9123.20	52023.88	33933.53	1.28	1.00	13.10
	Bottom	1533	135.17	4.53	12.21	17.55	20.86	9.66	1534.00	4157.90	9123.20	52023.88	33933.53	1.28	1.00	17.99
35N	Top	1535	511.09	129.11	300.23	20.82	51.87	44.68	3478.90	8893.90	25654.00	113183.93	49191.86	1.24	1.00	21.05
	Bottom	1535	521.9	0	0	20.82	0.00	0.00	3478.90	8893.90	25654.00	113183.93	49191.86	1.24	1.00	50.19
36N	Top	1537	495.35	270.55	260.94	21.18	68.53	6.77	3521.30	8893.90	25654.00	257873.87	112076.82	1.25	1.00	20.05
	Bottom	1537	506.16	0	0	21.18	0.00	0.00	3521.30	8893.90	25654.00	257873.87	112076.82	1.25	1.00	49.84
14S	Top	1494	116.09	10.88	385.88	96.93	25.19	158.75	2135.60	5807.40	15091.10	181009.38	68088.58	1.27	1.00	5.35
	Bottom	1494	119.09	7.4	140.37	96.93	38.01	61.35	2135.60	5807.40	15091.10	181009.38	68088.58	1.27	1.00	5.90
15S	Top	1496	160.38	3.92	370.27	112.40	0.00	0.00	1876.40	5258.80	11036.20	111596.94	74298.51	1.29	1.00	5.05
	Bottom	1702	163.63	3.13	189.61	112.40	13.83	26.81	1876.40	5258.80	11036.20	111596.94	74298.51	1.29	1.00	4.76
16S	Top	1498	205.01	1.11	263.82	121.74	0.00	79.25	1875.30	5258.80	11036.20	103983.04	69229.36	1.29	1.00	4.10
	Bottom	1704	208.35	6.22	100.38	121.74	15.20	36.61	1875.30	5258.80	11036.20	103983.04	69229.36	1.29	1.00	4.24
17S	Top	1500	149.75	15.08	374.44	118.28	0.00	0.00	1871.40	5258.80	11036.20	82440.03	54886.55	1.29	1.00	4.80
	Bottom	1706	153.7	2.93	179.58	118.28	5.91	22.14	1871.40	5258.80	11036.20	82440.03	54886.55	1.29	1.00	4.70
18S	Top	1502	184.51	14.84	153.58	121.05	2.05	31.49	1649.00	4376.30	10124.90	73112.04	45014.22	1.29	1.00	3.86
	Bottom	1708	187.99	6.51	63.06	121.05	0.00	13.96	1649.00	4376.30	10124.90	73112.04	45014.22	1.29	1.00	4.03
19S	Top	1504	195.09	2.18	166.59	124.48	0.00	0.00	1647.80	4376.30	10124.90	68624.16	42251.08	1.29	1.00	3.91
	Bottom	1710	198.94	2.13	85.64	124.48	2.18	25.13	1647.80	4376.30	10124.90	68624.16	42251.08	1.29	1.00	3.79
20S	Top	1506	165.32	93.06	516.07	112.18	0.00	67.28	2173.60	6411.00	13022.80	61419.65	41623.62	1.28	1.00	5.25
	Bottom	1506	171.7	0	0	112.18	55.47	0.00	2173.60	6411.00	13022.80	61419.65	41623.62	1.28	1.00	5.36
21S	Top	1508	282.96	5.36	211.45	143.17	47.59	26.77	2621.60	7258.20	17136.00	103760.01	58906.39	1.27	1.00	4.88
	Bottom	1508	289.48	2.89	109.33	143.17	0.50	47.88	2621.60	7258.20	17136.00	103760.01	58906.39	1.27	1.00	5.36
22S	Top	1510	282.09	144.25	318.81	140.20	19.76	104.15	2734.80	7465.90	18178.40	120621.95	65891.76	1.27	1.00	4.97
	Bottom	1510	288.66	47.23	162.26	140.20	10.06	44.06	2734.80	7465.90	18178.40	120621.95	65891.76	1.27	1.00	5.57



Made By: GHD  
 Checked By: CTG

Date: 4/10/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					Rating Factor		
			Dead Load			4F1 (Max P)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips	IMPACT	Condition Equation	Opr.
23S	Top	1512	119.85	95.65	625.15	110.81	0.00	0.00	2818.40	7672.50	19226.80	73711.90	38813.92	1.28	1.00	8.11
	Bottom	1512	129	0	0	110.81	37.14	150.77	2818.40	7672.50	19226.80	73711.90	38813.92	1.28	1.00	6.46
24S	Top	1514	177.76	19.75	46.14	120.52	25.91	17.98	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	3.99
	Bottom	1514	182.39	4.2	23.57	120.52	47.05	8.09	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	3.88
25S	Top	1516	173.51	1.43	80	115.83	11.76	19.68	1704.20	6550.20	10846.40	44067.05	28571.79	1.29	1.00	4.27
	Bottom	1516	178.18	4.73	39.84	115.83	19.82	37.82	1704.20	6550.20	10846.40	44067.05	28571.79	1.29	1.00	4.10
26S	Top	1518	135.33	120.24	245.35	105.79	0.00	0.67	2162.40	5820.10	13949.00	49673.65	28402.55	1.28	1.00	6.37
	Bottom	1518	142.8	0	0	105.79	49.98	0.00	2162.40	5820.10	13949.00	49673.65	28402.55	1.28	1.00	5.69
27S	Top	1520	216.4	48.11	194.5	140.09	12.38	0.00	1959.00	5390.00	11910.80	62461.78	39238.70	1.28	1.00	4.01
	Bottom	1712	221.73	29.6	85.42	140.09	2.19	22.20	1959.00	5390.00	11910.80	62461.78	39238.70	1.28	1.00	4.07
28S	Top	1522	218.96	101.84	156.84	141.17	0.00	45.49	1960.40	5390.00	11910.80	65488.22	41139.92	1.28	1.00	3.85
	Bottom	1714	224.19	54.69	70.48	141.17	4.79	16.44	1960.40	5390.00	11910.80	65488.22	41139.92	1.28	1.00	4.02
29S	Top	1524	158.65	107.95	263.55	116.91	0.00	0.00	2065.70	5606.10	12927.50	61732.28	36935.84	1.28	1.00	5.38
	Bottom	1524	164.69	0	0	116.91	8.03	60.68	2065.70	5606.10	12927.50	61732.28	36935.84	1.28	1.00	5.12
30S	Top	1526	240.32	79.03	115.07	125.28	10.12	25.85	1800.70	4896.30	11154.20	78305.20	48628.90	1.28	1.00	3.85
	Bottom	1526	244.39	40.1	51.65	125.28	7.65	5.37	1800.70	4896.30	11154.20	78305.20	48628.90	1.28	1.00	4.05
31S	Top	1528	241.39	73.07	130.24	117.15	8.96	27.59	1800.80	4896.30	11154.20	78427.17	48704.65	1.28	1.00	4.10
	Bottom	1528	245.46	46.95	55.51	117.15	9.91	46.53	1800.80	4896.30	11154.20	78427.17	48704.65	1.28	1.00	4.05
32S	Top	1530	130.23	70.87	25.89	105.14	30.09	12.26	1537.70	4157.90	9123.20	63164.35	41200.11	1.29	1.00	4.02
	Bottom	1530	133.84	47.56	5.65	105.14	45.40	16.66	1537.70	4157.90	9123.20	63164.35	41200.11	1.29	1.00	3.84
33S	Top	1532	334.39	105.09	1.34	120.15	1.06	2.07	1536.50	4157.90	9123.20	59113.10	38557.61	1.26	1.00	3.18
	Bottom	1532	338.06	24.43	13.98	120.15	30.55	18.27	1536.50	4157.90	9123.20	59113.10	38557.61	1.26	1.00	2.93
34S	Top	1534	109.45	150.18	187.79	108.73	5.68	32.34	2167.10	5582.10	13792.50	117071.73	65947.54	1.28	1.00	5.94
	Bottom	1534	114.29	64.5	98.73	108.73	4.65	63.60	2167.10	5582.10	13792.50	117071.73	65947.54	1.28	1.00	5.88
35S	Top	1536	441.13	282.31	288.88	135.68	0.00	88.14	3504.10	8893.90	25654.00	169625.93	73722.61	1.25	1.00	6.80
	Bottom	1536	450.3	0	0	135.68	162.54	0.00	3504.10	8893.90	25654.00	169625.93	73722.61	1.25	1.00	5.36
36S	Top	1538	456.54	144.69	320.16	124.94	45.77	0.00	3521.50	8893.90	25654.00	258957.37	112547.73	1.24	1.00	7.28
	Bottom	1538	465.71	0	0	124.94	0.00	97.79	3521.50	8893.90	25654.00	258957.37	112547.73	1.24	1.00	7.85



Made By: GHD  
 Checked By: CTG

Date: 4/10/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					IMPACT	Condition Equation	Rating Factor Opr.
			Dead Load			4F1 (Max My)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips			
14N	Top	1493	129.11	13.37	437.53	13.40	42.96	9.13	2135.80	5807.40	15091.10	183481.77	69018.60	1.27	1.00	22.29
	Bottom	1493	132.1	4.35	159.87	13.40	15.86	3.53	2135.80	5807.40	15091.10	183481.77	69018.60	1.27	1.00	35.44
15N	Top	1495	181.85	2.99	421.78	18.38	64.04	0.00	1876.90	5258.80	11036.20	116218.33	77375.32	1.29	1.00	13.37
	Bottom	1701	185.03	3.8	215.55	18.38	21.88	2.50	1876.90	5258.80	11036.20	116218.33	77375.32	1.29	1.00	21.31
16N	Top	1497	222.8	10.55	290.01	19.54	68.44	0.00	1876.40	5258.80	11036.20	112015.10	74576.91	1.29	1.00	12.27
	Bottom	1703	226.03	1.25	108.23	19.54	23.99	0.15	1876.40	5258.80	11036.20	112015.10	74576.91	1.29	1.00	19.72
17N	Top	1499	171.07	17.61	426.06	17.38	54.79	0.00	1873.80	5258.80	11036.20	94713.82	63058.14	1.29	1.00	14.90
	Bottom	1705	174.8	12.91	203.46	17.82	19.33	3.04	1873.80	5258.80	11036.20	94713.82	63058.14	1.29	1.00	22.50
18N	Top	1501	199.29	1.69	171.13	5.11	13.10	1.34	1651.50	4376.30	10124.90	84953.56	52304.90	1.29	1.00	47.03
	Bottom	1707	202.56	0.06	68.13	1.11	2.65	0.00	1651.50	4376.30	10124.90	84953.56	52304.90	1.29	1.00	232.14
19N	Top	1503	211.59	10.59	185.03	7.92	21.71	0.04	1650.40	4376.30	10124.90	79352.66	48856.49	1.29	1.00	29.43
	Bottom	1709	215.21	8.7	96.02	9.82	4.52	46.25	1650.40	4376.30	10124.90	79352.66	48856.49	1.29	1.00	25.08
20N	Top	1505	183.75	49.06	435.19	13.00	45.83	18.34	2349.90	6465.40	15025.20	85984.74	50309.76	1.28	1.00	21.93
	Bottom	1505	189.82	0	0	0.00	2.60	1.84	2349.90	6465.40	15025.20	85984.74	50309.76	1.28	1.00	612.16
21N	Top	1507	372.95	55.44	36.51	1.45	17.01	5.73	2278.20	5791.70	14821.40	128698.63	69474.54	1.26	1.00	71.14
	Bottom	1507	377.77	27.53	29.74	1.45	6.03	1.37	2278.20	5791.70	14821.40	128698.63	69474.54	1.26	1.00	159.92
22N	Top	1509	300.78	113.72	111.65	7.43	47.65	15.79	2134.60	6038.60	12978.30	88759.06	56897.31	1.27	1.00	22.34
	Bottom	1509	305.69	26.32	71.96	0.11	9.11	3.91	2134.60	6038.60	12978.30	88759.06	56897.31	1.27	1.00	155.40
23N	Top	1511	104.65	2.86	41.58	15.61	41.66	13.58	1634.10	4376.30	10124.90	40198.84	24749.95	1.30	1.00	15.68
	Bottom	1511	108.67	0	0	0.40	1.46	0.00	1634.10	4376.30	10124.90	40198.84	24749.95	1.30	1.00	555.83
24N	Top	1513	203.13	16.61	52.8	13.04	45.51	22.92	1707.60	6550.20	10846.40	49478.05	32080.12	1.29	1.00	17.67
	Bottom	1513	207.56	1.75	22.77	13.04	21.06	10.16	1707.60	6550.20	10846.40	49478.05	32080.12	1.29	1.00	25.17
25N	Top	1515	209.86	18.58	68.68	13.95	38.07	19.25	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	18.52
	Bottom	1515	214.33	13.96	39	13.95	17.12	8.06	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	25.42
26N	Top	1517	120.4	87.54	285.14	13.38	36.13	36.82	2166.10	5820.10	13949.00	53573.69	30632.52	1.29	1.00	20.75
	Bottom	1517	127.62	0	0	2.81	5.99	0.00	2166.10	5820.10	13949.00	53573.69	30632.52	1.29	1.00	140.83
27N	Top	1519	231.3	101.15	160.65	6.50	15.92	12.58	1959.60	5390.00	11910.80	63775.61	40064.05	1.29	1.00	38.95
	Bottom	1711	236.59	57.22	75	6.95	6.96	4.58	1959.60	5390.00	11910.80	63775.61	40064.05	1.29	1.00	55.88
28N	Top	1521	232.66	43.13	189.1	32.49	6.47	92.02	1961.00	5390.00	11910.80	66899.22	42026.32	1.29	1.00	11.33
	Bottom	1713	237.85	24.35	79.31	2.25	2.36	0.00	1961.00	5390.00	11910.80	66899.22	42026.32	1.29	1.00	186.21
29N	Top	1523	194.15	129.59	241.85	10.18	25.81	25.24	2063.80	5606.10	12927.50	58454.03	34974.38	1.29	1.00	25.37
	Bottom	1523	200.32	0	0	0.00	1.33	2.04	2063.80	5606.10	12927.50	58454.03	34974.38	1.29	1.00	788.77



Made By: GHD  
 Checked By: CTG

Date: 4/10/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					IMPACT	Condition Equation	Rating Factor
			Dead Load			4F1 (Max My)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips			Opr.
30N	Top	1525	261.42	57.7	116.49	5.02	8.37	9.98	1797.90	4896.30	11154.20	68492.86	42535.26	1.28	1.00	51.66
	Bottom	1525	265.73	26.48	46.58	4.43	7.23	0.00	1797.90	4896.30	11154.20	68492.86	42535.26	1.28	1.00	72.15
31N	Top	1527	261.87	94.44	135.17	15.46	29.37	29.69	1799.50	4896.30	11154.20	73706.03	45772.73	1.28	1.00	15.92
	Bottom	1527	266.05	60.56	66.18	15.46	11.17	10.43	1799.50	4896.30	11154.20	73706.03	45772.73	1.28	1.00	23.77
32N	Top	1529	225.84	282.11	524.59	17.50	34.51	49.82	2356.50	6465.40	15025.20	107045.31	62632.32	1.27	1.00	17.29
	Bottom	1715	232.56	136.23	185.22	86.23	8.81	81.45	2356.50	6465.40	15025.20	107045.31	62632.32	1.27	1.00	6.89
33N	Top	1531	379.21	184.85	128.61	20.51	73.12	34.64	2361.80	6465.40	15025.20	133600.12	78169.57	1.27	1.00	12.06
	Bottom	1531	384.33	76.26	80.69	14.98	20.07	22.79	2361.80	6465.40	15025.20	133600.12	78169.57	1.27	1.00	25.29
34N	Top	1533	131.26	14	14.77	17.55	43.27	19.90	1534.00	4157.90	9123.20	52023.88	33933.53	1.28	1.00	13.10
	Bottom	1533	135.17	4.53	12.21	17.55	20.86	9.66	1534.00	4157.90	9123.20	52023.88	33933.53	1.28	1.00	17.99
35N	Top	1535	511.09	129.11	300.23	20.14	89.72	33.34	3478.90	8893.90	25654.00	113183.93	49191.86	1.24	1.00	16.64
	Bottom	1535	521.9	0	0	29.24	4.95	26.93	3478.90	8893.90	25654.00	113183.93	49191.86	1.24	1.00	29.78
36N	Top	1537	495.35	270.55	260.94	20.24	97.82	32.49	3521.30	8893.90	25654.00	257873.87	112076.82	1.25	1.00	15.57
	Bottom	1537	506.16	0	0	13.68	22.26	30.76	3521.30	8893.90	25654.00	257873.87	112076.82	1.25	1.00	39.29
14S	Top	1494	116.09	10.88	385.88	86.10	26.59	61.66	2135.60	5807.40	15091.10	181009.38	68088.58	1.27	1.00	6.59
	Bottom	1494	119.09	7.4	140.37	86.10	42.32	23.94	2135.60	5807.40	15091.10	181009.38	68088.58	1.27	1.00	6.73
15S	Top	1496	160.38	3.92	370.27	49.33	9.71	0.00	1876.40	5258.80	11036.20	111596.94	74298.51	1.29	1.00	10.74
	Bottom	1702	163.63	3.13	189.61	107.22	15.37	12.61	1876.40	5258.80	11036.20	111596.94	74298.51	1.29	1.00	5.05
16S	Top	1498	205.01	1.11	263.82	45.55	8.98	129.12	1875.30	5258.80	11036.20	103983.04	69229.36	1.29	1.00	7.81
	Bottom	1704	208.35	6.22	100.38	110.22	19.85	0.84	1875.30	5258.80	11036.20	103983.04	69229.36	1.29	1.00	4.82
17S	Top	1500	149.75	15.08	374.44	36.55	1.97	0.00	1871.40	5258.80	11036.20	82440.03	54886.55	1.29	1.00	15.25
	Bottom	1706	153.7	2.93	179.58	115.83	19.61	7.39	1871.40	5258.80	11036.20	82440.03	54886.55	1.29	1.00	4.70
18S	Top	1502	184.51	14.84	153.58	119.75	2.22	50.25	1649.00	4376.30	10124.90	73112.04	45014.22	1.29	1.00	3.80
	Bottom	1708	187.99	6.51	63.06	21.05	5.15	0.89	1649.00	4376.30	10124.90	73112.04	45014.22	1.29	1.00	21.47
19S	Top	1504	195.09	2.18	166.59	54.85	7.45	0.00	1647.80	4376.30	10124.90	68624.16	42251.08	1.29	1.00	8.43
	Bottom	1710	198.94	2.13	85.64	0.00	4.92	1.96	1647.80	4376.30	10124.90	68624.16	42251.08	1.29	1.00	225.31
20S	Top	1506	165.32	93.06	516.07	62.96	5.80	281.30	2173.60	6411.00	13022.80	61419.65	41623.62	1.28	1.00	446.13
	Bottom	1506	171.7	0	0	109.57	56.75	0.00	2173.60	6411.00	13022.80	61419.65	41623.62	1.28	1.00	5.45
21S	Top	1508	282.96	5.36	211.45	142.15	48.36	16.05	2621.60	7258.20	17136.00	103760.01	58906.39	1.27	1.00	4.95
	Bottom	1508	289.48	2.89	109.33	66.78	17.01	41.45	2621.60	7258.20	17136.00	103760.01	58906.39	1.27	1.00	10.16
22S	Top	1510	282.09	144.25	318.81	108.38	47.76	260.43	2734.80	7465.90	18178.40	120621.95	65891.76	1.27	1.00	4.89
	Bottom	1510	288.66	47.23	162.26	115.02	61.48	119.72	2734.80	7465.90	18178.40	120621.95	65891.76	1.27	1.00	5.36



Made By: GHD  
 Checked By: CTG

Date: 4/10/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					Rating Factor		
			Dead Load			4F1 (Max My)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips	IMPACT	Condition Equation	Opr.
23S	Top	1512	119.85	95.65	625.15	71.70	75.51	0.00	2818.40	7672.50	19226.80	73711.90	38813.92	1.28	1.00	8.98
	Bottom	1512	129	0	0	99.99	56.90	80.32	2818.40	7672.50	19226.80	73711.90	38813.92	1.28	1.00	7.15
24S	Top	1514	177.76	19.75	46.14	112.58	27.48	2.68	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	4.32
	Bottom	1514	182.39	4.2	23.57	106.75	51.14	10.52	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	4.27
25S	Top	1516	173.51	1.43	80	100.73	19.18	14.93	1704.20	6550.20	10846.40	44067.05	28571.79	1.29	1.00	4.82
	Bottom	1516	178.18	4.73	39.84	100.73	34.67	28.18	1704.20	6550.20	10846.40	44067.05	28571.79	1.29	1.00	4.55
26S	Top	1518	135.33	120.24	245.35	0.00	3.02	0.00	2162.40	5820.10	13949.00	49673.65	28402.55	1.28	1.00	600.58
	Bottom	1518	142.8	0	0	59.25	79.04	0.00	2162.40	5820.10	13949.00	49673.65	28402.55	1.28	1.00	7.95
27S	Top	1520	216.4	48.11	194.5	97.59	42.29	0.00	1959.00	5390.00	11910.80	62461.78	39238.70	1.28	1.00	5.12
	Bottom	1712	221.73	29.6	85.42	97.59	21.93	59.68	1959.00	5390.00	11910.80	62461.78	39238.70	1.28	1.00	5.08
28S	Top	1522	218.96	101.84	156.84	116.33	9.05	5.09	1960.40	5390.00	11910.80	65488.22	41139.92	1.28	1.00	4.75
	Bottom	1714	224.19	54.69	70.48	10.22	25.15	0.00	1960.40	5390.00	11910.80	65488.22	41139.92	1.28	1.00	30.02
29S	Top	1524	158.65	107.95	263.55	54.02	88.22	0.00	2065.70	5606.10	12927.50	61732.28	36935.84	1.28	1.00	7.22
	Bottom	1524	164.69	0	0	97.84	18.16	23.52	2065.70	5606.10	12927.50	61732.28	36935.84	1.28	1.00	6.14
30S	Top	1526	240.32	79.03	115.07	89.02	31.74	100.09	1800.70	4896.30	11154.20	78305.20	48628.90	1.28	1.00	4.36
	Bottom	1526	244.39	40.1	51.65	86.44	55.71	114.91	1800.70	4896.30	11154.20	78305.20	48628.90	1.28	1.00	4.14
31S	Top	1528	241.39	73.07	130.24	87.04	56.90	45.14	1800.80	4896.30	11154.20	78427.17	48704.65	1.28	1.00	4.42
	Bottom	1528	245.46	46.95	55.51	87.04	29.97	95.23	1800.80	4896.30	11154.20	78427.17	48704.65	1.28	1.00	4.57
32S	Top	1530	130.23	70.87	25.89	61.26	42.44	74.83	1537.70	4157.90	9123.20	63164.35	41200.11	1.29	1.00	5.28
	Bottom	1530	133.84	47.56	5.65	61.26	86.24	36.21	1537.70	4157.90	9123.20	63164.35	41200.11	1.29	1.00	4.81
33S	Top	1532	334.39	105.09	1.34	71.35	49.81	28.29	1536.50	4157.90	9123.20	59113.10	38557.61	1.26	1.00	4.05
	Bottom	1532	338.06	24.43	13.98	99.22	79.65	26.24	1536.50	4157.90	9123.20	59113.10	38557.61	1.26	1.00	2.96
34S	Top	1534	109.45	150.18	187.79	61.08	134.85	79.85	2167.10	5582.10	13792.50	117071.73	65947.54	1.28	1.00	5.45
	Bottom	1534	114.29	64.5	98.73	61.08	46.39	148.32	2167.10	5582.10	13792.50	117071.73	65947.54	1.28	1.00	6.89
35S	Top	1536	441.13	282.31	288.88	64.62	51.85	0.00	3504.10	8893.90	25654.00	169625.93	73722.61	1.25	1.00	11.79
	Bottom	1536	450.3	0	0	132.53	173.19	0.00	3504.10	8893.90	25654.00	169625.93	73722.61	1.25	1.00	5.33
36S	Top	1538	456.54	144.69	320.16	105.13	182.66	0.00	3521.50	8893.90	25654.00	258957.37	112547.73	1.24	1.00	5.86
	Bottom	1538	465.71	0	0	97.55	172.75	0.00	3521.50	8893.90	25654.00	258957.37	112547.73	1.24	1.00	6.53



Made By: GHD  
 Checked By: CTG

Date: 4/10/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					Rating Factor		
			Dead Load			4F1 (Max Mz)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips	IMPACT	Condition Equation	Opr.
14N	Top	1493	129.11	13.37	437.53	9.15	3.88	64.47	2135.80	5807.40	15091.10	183481.77	69018.60	1.27	1.00	34.37
	Bottom	1493	132.1	4.35	159.87	9.15	0.00	24.74	2135.80	5807.40	15091.10	183481.77	69018.60	1.27	1.00	55.06
15N	Top	1495	181.85	2.99	421.78	7.07	31.05	1.63	1876.90	5258.80	11036.20	116218.33	77375.32	1.29	1.00	29.93
	Bottom	1701	185.03	3.8	215.55	13.53	0.00	15.83	1876.90	5258.80	11036.20	116218.33	77375.32	1.29	1.00	34.96
16N	Top	1497	222.8	10.55	290.01	13.49	11.65	41.22	1876.40	5258.80	11036.20	112015.10	74576.91	1.29	1.00	21.85
	Bottom	1703	226.03	1.25	108.23	0.00	0.00	19.26	1876.40	5258.80	11036.20	112015.10	74576.91	1.29	1.00	169.29
17N	Top	1499	171.07	17.61	426.06	0.00	0.00	6.12	1873.80	5258.80	11036.20	94713.82	63058.14	1.29	1.00	530.61
	Bottom	1705	174.8	12.91	203.46	69.00	17.34	19.91	1873.80	5258.80	11036.20	94713.82	63058.14	1.29	1.00	7.23
18N	Top	1501	199.29	1.69	171.13	3.23	0.00	6.93	1651.50	4376.30	10124.90	84953.56	52304.90	1.29	1.00	110.81
	Bottom	1707	202.56	0.06	68.13	0.00	0.01	3.00	1651.50	4376.30	10124.90	84953.56	52304.90	1.29	1.00	993.97
19N	Top	1503	211.59	10.59	185.03	0.22	0.16	1.66	1650.40	4376.30	10124.90	79352.66	48856.49	1.29	1.00	857.93
	Bottom	1709	215.21	8.7	96.02	0.15	0.34	2.83	1650.40	4376.30	10124.90	79352.66	48856.49	1.29	1.00	647.23
20N	Top	1505	183.75	49.06	435.19	7.50	7.09	24.92	2349.90	6465.40	15025.20	85984.74	50309.76	1.28	1.00	50.92
	Bottom	1505	189.82	0	0	0.00	2.60	1.84	2349.90	6465.40	15025.20	85984.74	50309.76	1.28	1.00	612.16
21N	Top	1507	372.95	55.44	36.51	3.58	2.31	6.03	2278.20	5791.70	14821.40	128698.63	69474.54	1.26	1.00	118.54
	Bottom	1507	377.77	27.53	29.74	3.48	0.00	10.61	2278.20	5791.70	14821.40	128698.63	69474.54	1.26	1.00	125.94
22N	Top	1509	300.78	113.72	111.65	8.40	34.93	22.80	2134.60	6038.60	12978.30	88759.06	56897.31	1.27	1.00	24.49
	Bottom	1509	305.69	26.32	71.96	0.79	7.82	5.35	2134.60	6038.60	12978.30	88759.06	56897.31	1.27	1.00	138.85
23N	Top	1511	104.65	2.86	41.58	15.61	41.66	13.58	1634.10	4376.30	10124.90	40198.84	24749.95	1.30	1.00	15.68
	Bottom	1511	108.67	0	0	0.00	0.02	6.91	1634.10	4376.30	10124.90	40198.84	24749.95	1.30	1.00	470.47
24N	Top	1513	203.13	16.61	52.8	13.04	45.51	22.92	1707.60	6550.20	10846.40	49478.05	32080.12	1.29	1.00	17.67
	Bottom	1513	207.56	1.75	22.77	13.04	21.06	10.16	1707.60	6550.20	10846.40	49478.05	32080.12	1.29	1.00	25.17
25N	Top	1515	209.86	18.58	68.68	13.95	38.07	19.25	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	18.52
	Bottom	1515	214.33	13.96	39	13.95	17.12	8.06	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	25.42
26N	Top	1517	120.4	87.54	285.14	13.79	35.80	38.00	2166.10	5820.10	13949.00	53573.69	30632.52	1.29	1.00	20.45
	Bottom	1517	127.62	0	0	0.26	0.07	1.67	2166.10	5820.10	13949.00	53573.69	30632.52	1.29	1.00	1291.12
27N	Top	1519	231.3	101.15	160.65	6.20	15.42	12.91	1959.60	5390.00	11910.80	63775.61	40064.05	1.29	1.00	40.14
	Bottom	1711	236.59	57.22	75	1.48	3.46	4.94	1959.60	5390.00	11910.80	63775.61	40064.05	1.29	1.00	160.63
28N	Top	1521	232.66	43.13	189.1	5.09	4.95	9.18	1961.00	5390.00	11910.80	66899.22	42026.32	1.29	1.00	67.47
	Bottom	1713	237.85	24.35	79.31	0.00	0.12	1.63	1961.00	5390.00	11910.80	66899.22	42026.32	1.29	1.00	1852.52
29N	Top	1523	194.15	129.59	241.85	10.18	25.81	25.24	2063.80	5606.10	12927.50	58454.03	34974.38	1.29	1.00	25.37
	Bottom	1523	200.32	0	0	0.00	0.58	1.04	2063.80	5606.10	12927.50	58454.03	34974.38	1.29	1.00	1694.13



Made By: GHD  
Checked By: CTG

Date: 4/10/2012  
Date: 4/13/2012

Job No.: P402110046  
Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					IMPACT	Condition Equation	Rating Factor Opr.
			Dead Load			4F1 (Max Mz)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips			
30N	Top	1525	261.42	57.7	116.49	5.02	8.37	9.98	1797.90	4896.30	11154.20	68492.86	42535.26	1.28	1.00	51.66
	Bottom	1525	265.73	26.48	46.58	0.00	0.06	1.46	1797.90	4896.30	11154.20	68492.86	42535.26	1.28	1.00	1984.56
31N	Top	1527	261.87	94.44	135.17	14.95	29.22	30.68	1799.50	4896.30	11154.20	73706.03	45772.73	1.28	1.00	16.13
	Bottom	1527	266.05	60.56	66.18	14.95	11.07	10.84	1799.50	4896.30	11154.20	73706.03	45772.73	1.28	1.00	24.32
32N	Top	1529	225.84	282.11	524.59	16.84	13.94	56.60	2356.50	6465.40	15025.20	107045.31	62632.32	1.27	1.00	21.25
	Bottom	1715	232.56	136.23	185.22	12.58	3.64	21.50	2356.50	6465.40	15025.20	107045.31	62632.32	1.27	1.00	40.67
33N	Top	1531	379.21	184.85	128.61	17.94	49.52	44.06	2361.80	6465.40	15025.20	133600.12	78169.57	1.27	1.00	14.78
	Bottom	1531	384.33	76.26	80.69	12.39	18.31	24.49	2361.80	6465.40	15025.20	133600.12	78169.57	1.27	1.00	28.55
34N	Top	1533	131.26	14	14.77	17.43	40.57	20.27	1534.00	4157.90	9123.20	52023.88	33933.53	1.28	1.00	13.48
	Bottom	1533	135.17	4.53	12.21	5.36	0.00	13.52	1534.00	4157.90	9123.20	52023.88	33933.53	1.28	1.00	63.19
35N	Top	1535	511.09	129.11	300.23	20.08	23.62	45.78	3478.90	8893.90	25654.00	113183.93	49191.86	1.24	1.00	27.91
	Bottom	1535	521.9	0	0	1.82	0.00	20.70	3478.90	8893.90	25654.00	113183.93	49191.86	1.24	1.00	220.89
36N	Top	1537	495.35	270.55	260.94	17.60	81.59	38.64	3521.30	8893.90	25654.00	257873.87	112076.82	1.25	1.00	17.88
	Bottom	1537	506.16	0	0	16.82	18.16	32.75	3521.30	8893.90	25654.00	257873.87	112076.82	1.25	1.00	36.82
14S	Top	1494	116.09	10.88	385.88	56.49	3.37	283.74	2135.60	5807.40	15091.10	181009.38	68088.58	1.27	1.00	7.02
	Bottom	1494	119.09	7.4	140.37	56.49	0.00	109.46	2135.60	5807.40	15091.10	181009.38	68088.58	1.27	1.00	9.78
15S	Top	1496	160.38	3.92	370.27	32.22	0.00	3.92	1876.40	5258.80	11036.20	111596.94	74298.51	1.29	1.00	17.25
	Bottom	1702	163.63	3.13	189.61	78.14	0.00	70.93	1876.40	5258.80	11036.20	111596.94	74298.51	1.29	1.00	6.42
16S	Top	1498	205.01	1.11	263.82	96.55	1.84	224.74	1875.30	5258.80	11036.20	103983.04	69229.36	1.29	1.00	4.08
	Bottom	1704	208.35	6.22	100.38	96.55	0.00	104.13	1875.30	5258.80	11036.20	103983.04	69229.36	1.29	1.00	4.94
17S	Top	1500	149.75	15.08	374.44	0.00	0.00	23.58	1871.40	5258.80	11036.20	82440.03	54886.55	1.29	1.00	141.82
	Bottom	1706	153.7	2.93	179.58	49.66	0.84	117.67	1871.40	5258.80	11036.20	82440.03	54886.55	1.29	1.00	8.30
18S	Top	1502	184.51	14.84	153.58	77.41	0.00	157.21	1649.00	4376.30	10124.90	73112.04	45014.22	1.29	1.00	4.73
	Bottom	1708	187.99	6.51	63.06	77.41	2.01	72.47	1649.00	4376.30	10124.90	73112.04	45014.22	1.29	1.00	5.51
19S	Top	1504	195.09	2.18	166.59	0.00	0.20	5.49	1647.80	4376.30	10124.90	68624.16	42251.08	1.29	1.00	499.64
	Bottom	1710	198.94	2.13	85.64	87.74	1.81	71.06	1647.80	4376.30	10124.90	68624.16	42251.08	1.29	1.00	4.89
20S	Top	1506	165.32	93.06	516.07	78.64	0.00	389.07	2173.60	6411.00	13022.80	61419.65	41623.62	1.28	1.00	4.48
	Bottom	1506	171.7	0	0	0.00	0.00	55.31	2173.60	6411.00	13022.80	61419.65	41623.62	1.28	1.00	75.95
21S	Top	1508	282.96	5.36	211.45	85.61	10.93	90.12	2621.60	7258.20	17136.00	103760.01	58906.39	1.27	1.00	7.74
	Bottom	1508	289.48	2.89	109.33	114.78	13.21	162.86	2621.60	7258.20	17136.00	103760.01	58906.39	1.27	1.00	5.56
22S	Top	1510	282.09	144.25	318.81	108.38	47.76	260.43	2734.80	7465.90	18178.40	120621.95	65891.76	1.27	1.00	4.89
	Bottom	1510	288.66	47.23	162.26	72.30	18.07	144.03	2734.80	7465.90	18178.40	120621.95	65891.76	1.27	1.00	8.28



Made By: GHD  
 Checked By: CTG

Date: 4/10/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					Rating Factor		
			Dead Load			4F1 (Max Mz)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips	IMPACT	Condition Equation	Opr.
23S	Top	1512	119.85	95.65	625.15	0.00	0.00	63.14	2818.40	7672.50	19226.80	73711.90	38813.92	1.28	1.00	97.13
	Bottom	1512	129	0	0	71.70	0.00	444.75	2818.40	7672.50	19226.80	73711.90	38813.92	1.28	1.00	6.87
24S	Top	1514	177.76	19.75	46.14	97.61	12.67	45.23	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	4.80
	Bottom	1514	182.39	4.2	23.57	97.61	20.21	21.46	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	4.90
25S	Top	1516	173.51	1.43	80	80.98	14.89	29.47	1704.20	6550.20	10846.40	44067.05	28571.79	1.29	1.00	5.81
	Bottom	1516	178.18	4.73	39.84	80.98	8.58	61.65	1704.20	6550.20	10846.40	44067.05	28571.79	1.29	1.00	5.59
26S	Top	1518	135.33	120.24	245.35	59.25	0.00	212.19	2162.40	5820.10	13949.00	49673.65	28402.55	1.28	1.00	7.20
	Bottom	1518	142.8	0	0	91.73	37.47	35.06	2162.40	5820.10	13949.00	49673.65	28402.55	1.28	1.00	6.36
27S	Top	1520	216.4	48.11	194.5	80.79	3.61	14.27	1959.00	5390.00	11910.80	62461.78	39238.70	1.28	1.00	6.86
	Bottom	1712	221.73	29.6	85.42	106.44	21.79	62.46	1959.00	5390.00	11910.80	62461.78	39238.70	1.28	1.00	4.70
28S	Top	1522	218.96	101.84	156.84	117.59	0.00	124.00	1960.40	5390.00	11910.80	65488.22	41139.92	1.28	1.00	4.13
	Bottom	1714	224.19	54.69	70.48	117.59	25.15	56.67	1960.40	5390.00	11910.80	65488.22	41139.92	1.28	1.00	4.28
29S	Top	1524	158.65	107.95	263.55	0.00	0.00	9.66	2065.70	5606.10	12927.50	61732.28	36935.84	1.28	1.00	406.47
	Bottom	1524	164.69	0	0	54.02	0.00	210.32	2065.70	5606.10	12927.50	61732.28	36935.84	1.28	1.00	7.50
30S	Top	1526	240.32	79.03	115.07	89.02	31.74	100.09	1800.70	4896.30	11154.20	78305.20	48628.90	1.28	1.00	4.36
	Bottom	1526	244.39	40.1	51.65	89.02	55.71	44.41	1800.70	4896.30	11154.20	78305.20	48628.90	1.28	1.00	4.46
31S	Top	1528	241.39	73.07	130.24	87.04	56.90	45.14	1800.80	4896.30	11154.20	78427.17	48704.65	1.28	1.00	4.42
	Bottom	1528	245.46	46.95	55.51	87.04	29.97	95.23	1800.80	4896.30	11154.20	78427.17	48704.65	1.28	1.00	4.57
32S	Top	1530	130.23	70.87	25.89	52.78	41.17	79.32	1537.70	4157.90	9123.20	63164.35	41200.11	1.29	1.00	5.81
	Bottom	1530	133.84	47.56	5.65	52.78	85.24	38.79	1537.70	4157.90	9123.20	63164.35	41200.11	1.29	1.00	5.25
33S	Top	1532	334.39	105.09	1.34	79.05	45.87	65.58	1536.50	4157.90	9123.20	59113.10	38557.61	1.26	1.00	3.56
	Bottom	1532	338.06	24.43	13.98	88.75	29.38	62.24	1536.50	4157.90	9123.20	59113.10	38557.61	1.26	1.00	3.57
34S	Top	1534	109.45	150.18	187.79	61.08	134.85	79.85	2167.10	5582.10	13792.50	117071.73	65947.54	1.28	1.00	5.45
	Bottom	1534	114.29	64.5	98.73	68.20	45.10	148.94	2167.10	5582.10	13792.50	117071.73	65947.54	1.28	1.00	6.47
35S	Top	1536	441.13	282.31	288.88	117.71	0.00	145.20	3504.10	8893.90	25654.00	169625.93	73722.61	1.25	1.00	7.27
	Bottom	1536	450.3	0	0	76.19	0.00	69.79	3504.10	8893.90	25654.00	169625.93	73722.61	1.25	1.00	12.50
36S	Top	1538	456.54	144.69	320.16	83.85	0.00	122.60	3521.50	8893.90	25654.00	258957.37	112547.73	1.24	1.00	10.31
	Bottom	1538	465.71	0	0	105.13	0.00	189.78	3521.50	8893.90	25654.00	258957.37	112547.73	1.24	1.00	8.25





Made By: GHD  
 Checked By: CTG

Date: 4/10/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					Rating Factor		
			Dead Load			5C1 (Max P)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips	IMPACT	Condition Equation	Opr.
14N	Top	1493	129.11	13.37	437.53	103.70	17.06	202.68	2135.80	5807.40	15091.10	183481.77	69018.60	1.27	1.00	4.90
	Bottom	1493	132.1	4.35	159.87	103.70	17.13	79.35	2135.80	5807.40	15091.10	183481.77	69018.60	1.27	1.00	5.77
15N	Top	1495	181.85	2.99	421.78	124.81	15.21	0.00	1876.90	5258.80	11036.20	116218.33	77375.32	1.29	1.00	4.25
	Bottom	1701	185.03	3.8	215.55	124.81	17.96	57.03	1876.90	5258.80	11036.20	116218.33	77375.32	1.29	1.00	4.03
16N	Top	1497	222.8	10.55	290.01	143.56	23.95	141.21	1876.40	5258.80	11036.20	112015.10	74576.91	1.29	1.00	3.07
	Bottom	1703	226.03	1.25	108.23	143.56	23.67	65.51	1876.40	5258.80	11036.20	112015.10	74576.91	1.29	1.00	3.40
17N	Top	1499	171.07	17.61	426.06	105.20	22.94	0.00	1873.80	5258.80	11036.20	94713.82	63058.14	1.29	1.00	4.87
	Bottom	1705	174.8	12.91	203.46	105.20	15.74	85.01	1873.80	5258.80	11036.20	94713.82	63058.14	1.29	1.00	4.53
18N	Top	1501	199.29	1.69	171.13	124.46	28.18	99.53	1651.50	4376.30	10124.90	84953.56	52304.90	1.29	1.00	3.20
	Bottom	1707	202.56	0.06	68.13	124.46	19.17	45.78	1651.50	4376.30	10124.90	84953.56	52304.90	1.29	1.00	3.53
19N	Top	1503	211.59	10.59	185.03	125.59	18.28	0.00	1650.40	4376.30	10124.90	79352.66	48856.49	1.29	1.00	3.60
	Bottom	1709	215.21	8.7	96.02	125.59	14.64	48.02	1650.40	4376.30	10124.90	79352.66	48856.49	1.29	1.00	3.46
20N	Top	1505	183.75	49.06	435.19	131.43	0.00	243.95	2349.90	6465.40	15025.20	85984.74	50309.76	1.28	1.00	4.20
	Bottom	1505	189.82	0	0	131.43	34.63	0.00	2349.90	6465.40	15025.20	85984.74	50309.76	1.28	1.00	5.25
21N	Top	1507	372.95	55.44	36.51	155.12	48.71	20.76	2278.20	5791.70	14821.40	128698.63	69474.54	1.26	1.00	3.63
	Bottom	1507	377.77	27.53	29.74	155.12	30.15	11.43	2278.20	5791.70	14821.40	128698.63	69474.54	1.26	1.00	3.84
22N	Top	1509	300.78	113.72	111.65	151.75	46.59	23.72	2134.60	6038.60	12978.30	88759.06	56897.31	1.27	1.00	3.50
	Bottom	1509	305.69	26.32	71.96	151.75	20.34	46.13	2134.60	6038.60	12978.30	88759.06	56897.31	1.27	1.00	3.71
23N	Top	1511	104.65	2.86	41.58	97.81	0.00	0.00	1634.10	4376.30	10124.90	40198.84	24749.95	1.30	1.00	5.41
	Bottom	1511	108.67	0	0	97.81	7.74	50.59	1634.10	4376.30	10124.90	40198.84	24749.95	1.30	1.00	4.85
24N	Top	1513	203.13	16.61	52.8	132.13	4.47	27.74	1707.60	6550.20	10846.40	49478.05	32080.12	1.29	1.00	3.69
	Bottom	1513	207.56	1.75	22.77	132.13	22.72	17.07	1707.60	6550.20	10846.40	49478.05	32080.12	1.29	1.00	3.63
25N	Top	1515	209.86	18.58	68.68	135.50	0.00	17.28	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	3.64
	Bottom	1515	214.33	13.96	39	135.50	5.24	44.42	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	3.50
26N	Top	1517	120.4	87.54	285.14	110.65	0.00	121.54	2166.10	5820.10	13949.00	53573.69	30632.52	1.29	1.00	5.23
	Bottom	1517	127.62	0	0	110.65	44.43	0.00	2166.10	5820.10	13949.00	53573.69	30632.52	1.29	1.00	5.62
27N	Top	1519	231.3	101.15	160.65	147.32	65.16	0.00	1959.60	5390.00	11910.80	63775.61	40064.05	1.29	1.00	3.29
	Bottom	1711	236.59	57.22	75	147.32	36.49	30.94	1959.60	5390.00	11910.80	63775.61	40064.05	1.29	1.00	3.47
28N	Top	1521	232.66	43.13	189.1	147.26	8.76	103.80	1961.00	5390.00	11910.80	66899.22	42026.32	1.29	1.00	3.40
	Bottom	1713	237.85	24.35	79.31	147.26	5.82	51.15	1961.00	5390.00	11910.80	66899.22	42026.32	1.29	1.00	3.68
29N	Top	1523	194.15	129.59	241.85	111.55	64.11	0.00	2063.80	5606.10	12927.50	58454.03	34974.38	1.29	1.00	4.48
	Bottom	1523	200.32	0	0	111.55	0.00	126.75	2063.80	5606.10	12927.50	58454.03	34974.38	1.29	1.00	4.87



Made By: GHD  
 Checked By: CTG

Date: 4/10/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					Rating Factor		
			Dead Load			5C1 (Max P)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips	IMPACT	Condition Equation	Opr.
30N	Top	1525	261.42	57.7	116.49	139.49	3.30	82.19	1797.90	4896.30	11154.20	68492.86	42535.26	1.28	1.00	3.27
	Bottom	1525	265.73	26.48	46.58	139.49	12.25	43.71	1797.90	4896.30	11154.20	68492.86	42535.26	1.28	1.00	3.40
31N	Top	1527	261.87	94.44	135.17	134.20	58.89	16.91	1799.50	4896.30	11154.20	73706.03	45772.73	1.28	1.00	3.13
	Bottom	1527	266.05	60.56	66.18	134.20	35.41	48.69	1799.50	4896.30	11154.20	73706.03	45772.73	1.28	1.00	3.26
32N	Top	1529	225.84	282.11	524.59	136.73	0.00	229.94	2356.50	6465.40	15025.20	107045.31	62632.32	1.27	1.00	3.80
	Bottom	1715	232.56	136.23	185.22	136.73	19.55	85.50	2356.50	6465.40	15025.20	107045.31	62632.32	1.27	1.00	4.48
33N	Top	1531	379.21	184.85	128.61	166.85	92.01	35.96	2361.80	6465.40	15025.20	133600.12	78169.57	1.27	1.00	3.09
	Bottom	1531	384.33	76.26	80.69	166.85	49.48	72.72	2361.80	6465.40	15025.20	133600.12	78169.57	1.27	1.00	3.35
34N	Top	1533	131.26	14	14.77	122.07	20.59	0.00	1534.00	4157.90	9123.20	52023.88	33933.53	1.28	1.00	3.75
	Bottom	1533	135.17	4.53	12.21	122.07	17.69	5.33	1534.00	4157.90	9123.20	52023.88	33933.53	1.28	1.00	3.76
35N	Top	1535	511.09	129.11	300.23	181.24	0.00	75.11	3478.90	8893.90	25654.00	113183.93	49191.86	1.24	1.00	5.23
	Bottom	1535	521.9	0	0	181.24	35.06	0.00	3478.90	8893.90	25654.00	113183.93	49191.86	1.24	1.00	5.35
36N	Top	1537	495.35	270.55	260.94	194.72	146.20	0.00	3521.30	8893.90	25654.00	257873.87	112076.82	1.25	1.00	3.92
	Bottom	1537	506.16	0	0	194.72	0.00	91.92	3521.30	8893.90	25654.00	257873.87	112076.82	1.25	1.00	5.08
14S	Top	1494	116.09	10.88	385.88	98.94	24.18	188.97	2135.60	5807.40	15091.10	181009.38	68088.58	1.27	1.00	5.11
	Bottom	1494	119.09	7.4	140.37	98.94	35.72	73.07	2135.60	5807.40	15091.10	181009.38	68088.58	1.27	1.00	5.76
15S	Top	1496	160.38	3.92	370.27	118.98	0.00	0.00	1876.40	5258.80	11036.20	111596.94	74298.51	1.29	1.00	4.77
	Bottom	1702	163.63	3.13	189.61	118.98	7.95	54.85	1876.40	5258.80	11036.20	111596.94	74298.51	1.29	1.00	4.42
16S	Top	1498	205.01	1.11	263.82	139.83	0.00	134.71	1875.30	5258.80	11036.20	103983.04	69229.36	1.29	1.00	3.40
	Bottom	1704	208.35	6.22	100.38	139.83	13.73	62.28	1875.30	5258.80	11036.20	103983.04	69229.36	1.29	1.00	3.64
17S	Top	1500	149.75	15.08	374.44	111.59	0.00	0.00	1871.40	5258.80	11036.20	82440.03	54886.55	1.29	1.00	5.09
	Bottom	1706	153.7	2.93	179.58	111.59	2.77	94.89	1871.40	5258.80	11036.20	82440.03	54886.55	1.29	1.00	4.53
18S	Top	1502	184.51	14.84	153.58	137.98	0.84	102.70	1649.00	4376.30	10124.90	73112.04	45014.22	1.29	1.00	3.16
	Bottom	1708	187.99	6.51	63.06	137.98	0.00	46.86	1649.00	4376.30	10124.90	73112.04	45014.22	1.29	1.00	3.41
19S	Top	1504	195.09	2.18	166.59	133.98	0.00	0.00	1647.80	4376.30	10124.90	68624.16	42251.08	1.29	1.00	3.63
	Bottom	1710	198.94	2.13	85.64	133.98	1.44	59.22	1647.80	4376.30	10124.90	68624.16	42251.08	1.29	1.00	3.40
20S	Top	1506	165.32	93.06	516.07	131.88	0.00	243.61	2173.60	6411.00	13022.80	61419.65	41623.62	1.28	1.00	3.74
	Bottom	1506	171.7	0	0	131.88	76.39	0.00	2173.60	6411.00	13022.80	61419.65	41623.62	1.28	1.00	4.45
21S	Top	1508	282.96	5.36	211.45	180.34	37.08	48.00	2621.60	7258.20	17136.00	103760.01	58906.39	1.27	1.00	3.99
	Bottom	1508	289.48	2.89	109.33	180.34	3.01	91.43	2621.60	7258.20	17136.00	103760.01	58906.39	1.27	1.00	4.13
22S	Top	1510	282.09	144.25	318.81	179.79	28.92	133.84	2734.80	7465.90	18178.40	120621.95	65891.76	1.27	1.00	3.85
	Bottom	1510	288.66	47.23	162.26	179.79	12.77	56.94	2734.80	7465.90	18178.40	120621.95	65891.76	1.27	1.00	4.34



Made By: GHD  
 Checked By: CTG

Date: 4/10/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					Rating Factor		
			Dead Load			5C1 (Max P)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips	IMPACT	Condition Equation	Opr.
23S	Top	1512	119.85	95.65	625.15	120.01	10.44	0.00	2818.40	7672.50	19226.80	73711.90	38813.92	1.28	1.00	7.25
	Bottom	1512	129	0	0	120.01	0.00	380.31	2818.40	7672.50	19226.80	73711.90	38813.92	1.28	1.00	173.32
24S	Top	1514	177.76	19.75	46.14	129.29	25.59	14.20	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	3.76
	Bottom	1514	182.39	4.2	23.57	129.29	46.10	5.94	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	3.66
25S	Top	1516	173.51	1.43	80	119.89	8.67	29.97	1704.20	6550.20	10846.40	44067.05	28571.79	1.29	1.00	4.10
	Bottom	1516	178.18	4.73	39.84	119.89	16.86	61.16	1704.20	6550.20	10846.40	44067.05	28571.79	1.29	1.00	3.88
26S	Top	1518	135.33	120.24	245.35	117.34	0.00	119.05	2162.40	5820.10	13949.00	49673.65	28402.55	1.28	1.00	101.25
	Bottom	1518	142.8	0	0	117.34	87.00	0.00	2162.40	5820.10	13949.00	49673.65	28402.55	1.28	1.00	4.72
27S	Top	1520	216.4	48.11	194.5	169.00	42.66	0.00	1959.00	5390.00	11910.80	62461.78	39238.70	1.28	1.00	3.14
	Bottom	1712	221.73	29.6	85.42	169.00	17.66	48.44	1959.00	5390.00	11910.80	62461.78	39238.70	1.28	1.00	3.20
28S	Top	1522	218.96	101.84	156.84	173.87	0.00	93.55	1960.40	5390.00	11910.80	65488.22	41139.92	1.28	1.00	3.02
	Bottom	1714	224.19	54.69	70.48	173.87	11.17	38.29	1960.40	5390.00	11910.80	65488.22	41139.92	1.28	1.00	3.17
29S	Top	1524	158.65	107.95	263.55	118.86	61.11	0.00	2065.70	5606.10	12927.50	61732.28	36935.84	1.28	1.00	4.43
	Bottom	1524	164.69	0	0	118.86	0.00	193.52	2065.70	5606.10	12927.50	61732.28	36935.84	1.28	1.00	4.41
30S	Top	1526	240.32	79.03	115.07	156.60	27.00	71.61	1800.70	4896.30	11154.20	78305.20	48628.90	1.28	1.00	2.87
	Bottom	1526	244.39	40.1	51.65	156.60	39.90	26.90	1800.70	4896.30	11154.20	78305.20	48628.90	1.28	1.00	2.97
31S	Top	1528	241.39	73.07	130.24	138.72	27.28	48.79	1800.80	4896.30	11154.20	78427.17	48704.65	1.28	1.00	3.26
	Bottom	1528	245.46	46.95	55.51	138.72	12.06	95.29	1800.80	4896.30	11154.20	78427.17	48704.65	1.28	1.00	3.27
32S	Top	1530	130.23	70.87	25.89	113.36	48.64	36.32	1537.70	4157.90	9123.20	63164.35	41200.11	1.29	1.00	3.45
	Bottom	1530	133.84	47.56	5.65	113.36	87.65	14.59	1537.70	4157.90	9123.20	63164.35	41200.11	1.29	1.00	3.23
33S	Top	1532	334.39	105.09	1.34	158.60	15.10	0.00	1536.50	4157.90	9123.20	59113.10	38557.61	1.26	1.00	2.34
	Bottom	1532	338.06	24.43	13.98	158.60	41.59	4.86	1536.50	4157.90	9123.20	59113.10	38557.61	1.26	1.00	2.26
34S	Top	1534	109.45	150.18	187.79	114.80	85.51	72.91	2167.10	5582.10	13792.50	117071.73	65947.54	1.28	1.00	4.31
	Bottom	1534	114.29	64.5	98.73	114.80	25.77	136.86	2167.10	5582.10	13792.50	117071.73	65947.54	1.28	1.00	4.83
35S	Top	1536	441.13	282.31	288.88	185.37	0.00	104.00	3504.10	8893.90	25654.00	169625.93	73722.61	1.25	1.00	5.03
	Bottom	1536	450.3	0	0	185.37	182.37	0.00	3504.10	8893.90	25654.00	169625.93	73722.61	1.25	1.00	4.17
36S	Top	1538	456.54	144.69	320.16	173.20	33.85	0.00	3521.50	8893.90	25654.00	258957.37	112547.73	1.24	1.00	5.58
	Bottom	1538	465.71	0	0	173.20	0.00	97.04	3521.50	8893.90	25654.00	258957.37	112547.73	1.24	1.00	5.82



Made By: GHD  
 Checked By: CTG

Date: 4/10/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					Rating Factor		
			Dead Load			5C1 (Max My)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips	IMPACT	Condition Equation	Opr.
14N	Top	1493	129.11	13.37	437.53	74.58	17.71	44.07	2135.80	5807.40	15091.10	183481.77	69018.60	1.27	1.00	7.79
	Bottom	1493	132.1	4.35	159.87	103.70	17.13	79.35	2135.80	5807.40	15091.10	183481.77	69018.60	1.27	1.00	5.77
15N	Top	1495	181.85	2.99	421.78	89.01	27.51	0.00	1876.90	5258.80	11036.20	116218.33	77375.32	1.29	1.00	5.60
	Bottom	1701	185.03	3.8	215.55	89.01	22.03	12.82	1876.90	5258.80	11036.20	116218.33	77375.32	1.29	1.00	5.73
16N	Top	1497	222.8	10.55	290.01	142.00	24.47	133.44	1876.40	5258.80	11036.20	112015.10	74576.91	1.29	1.00	3.11
	Bottom	1703	226.03	1.25	108.23	142.00	23.80	61.90	1876.40	5258.80	11036.20	112015.10	74576.91	1.29	1.00	3.45
17N	Top	1499	171.07	17.61	426.06	93.84	23.73	0.00	1873.80	5258.80	11036.20	94713.82	63058.14	1.29	1.00	5.39
	Bottom	1705	174.8	12.91	203.46	11.11	17.49	0.00	1873.80	5258.80	11036.20	94713.82	63058.14	1.29	1.00	32.73
18N	Top	1501	199.29	1.69	171.13	74.66	34.96	13.83	1651.50	4376.30	10124.90	84953.56	52304.90	1.29	1.00	5.38
	Bottom	1707	202.56	0.06	68.13	74.66	20.46	7.93	1651.50	4376.30	10124.90	84953.56	52304.90	1.29	1.00	5.87
19N	Top	1503	211.59	10.59	185.03	98.65	24.58	0.00	1650.40	4376.30	10124.90	79352.66	48856.49	1.29	1.00	4.41
	Bottom	1709	215.21	8.7	96.02	34.24	17.94	63.17	1650.40	4376.30	10124.90	79352.66	48856.49	1.29	1.00	9.34
20N	Top	1505	183.75	49.06	435.19	0.00	20.49	0.00	2349.90	6465.40	15025.20	85984.74	50309.76	1.28	1.00	96.36
	Bottom	1505	189.82	0	0	89.27	53.90	0.00	2349.90	6465.40	15025.20	85984.74	50309.76	1.28	1.00	6.93
21N	Top	1507	372.95	55.44	36.51	138.46	85.98	87.83	2278.20	5791.70	14821.40	128698.63	69474.54	1.26	1.00	3.46
	Bottom	1507	377.77	27.53	29.74	138.46	51.54	185.59	2278.20	5791.70	14821.40	128698.63	69474.54	1.26	1.00	3.45
22N	Top	1509	300.78	113.72	111.65	121.05	69.47	85.47	2134.60	6038.60	12978.30	88759.06	56897.31	1.27	1.00	3.77
	Bottom	1509	305.69	26.32	71.96	84.72	42.92	184.97	2134.60	6038.60	12978.30	88759.06	56897.31	1.27	1.00	4.72
23N	Top	1511	104.65	2.86	41.58	26.60	9.01	0.00	1634.10	4376.30	10124.90	40198.84	24749.95	1.30	1.00	17.60
	Bottom	1511	108.67	0	0	40.71	20.11	5.56	1634.10	4376.30	10124.90	40198.84	24749.95	1.30	1.00	10.76
24N	Top	1513	203.13	16.61	52.8	89.03	10.73	36.99	1707.60	6550.20	10846.40	49478.05	32080.12	1.29	1.00	5.20
	Bottom	1513	207.56	1.75	22.77	102.67	30.34	16.47	1707.60	6550.20	10846.40	49478.05	32080.12	1.29	1.00	4.51
25N	Top	1515	209.86	18.58	68.68	104.21	20.55	12.53	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	4.51
	Bottom	1515	214.33	13.96	39	111.08	13.73	19.13	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	4.28
26N	Top	1517	120.4	87.54	285.14	59.98	13.46	198.34	2166.10	5820.10	13949.00	53573.69	30632.52	1.29	1.00	7.02
	Bottom	1517	127.62	0	0	50.32	57.53	0.00	2166.10	5820.10	13949.00	53573.69	30632.52	1.29	1.00	9.91
27N	Top	1519	231.3	101.15	160.65	147.32	65.16	0.00	1959.60	5390.00	11910.80	63775.61	40064.05	1.29	1.00	3.29
	Bottom	1711	236.59	57.22	75	147.32	36.49	30.94	1959.60	5390.00	11910.80	63775.61	40064.05	1.29	1.00	3.47
28N	Top	1521	232.66	43.13	189.1	90.76	27.87	47.78	1961.00	5390.00	11910.80	66899.22	42026.32	1.29	1.00	5.24
	Bottom	1713	237.85	24.35	79.31	3.37	16.04	14.84	1961.00	5390.00	11910.80	66899.22	42026.32	1.29	1.00	49.48
29N	Top	1523	194.15	129.59	241.85	109.86	69.43	0.00	2063.80	5606.10	12927.50	58454.03	34974.38	1.29	1.00	4.47
	Bottom	1523	200.32	0	0	0.71	0.62	15.41	2063.80	5606.10	12927.50	58454.03	34974.38	1.29	1.00	187.68



Made By: GHD  
 Checked By: CTG

Date: 4/10/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					Rating Factor		
			Dead Load			5C1 (Max My)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips	IMPACT	Condition Equation	Opr.
30N	Top	1525	261.42	57.7	116.49	62.07	19.96	65.26	1797.90	4896.30	11154.20	68492.86	42535.26	1.28	1.00	6.29
	Bottom	1525	265.73	26.48	46.58	62.07	37.84	30.82	1797.90	4896.30	11154.20	68492.86	42535.26	1.28	1.00	6.33
31N	Top	1527	261.87	94.44	135.17	134.20	58.89	16.91	1799.50	4896.30	11154.20	73706.03	45772.73	1.28	1.00	3.13
	Bottom	1527	266.05	60.56	66.18	134.20	35.41	48.69	1799.50	4896.30	11154.20	73706.03	45772.73	1.28	1.00	3.26
32N	Top	1529	225.84	282.11	524.59	0.00	20.15	0.00	2356.50	6465.40	15025.20	107045.31	62632.32	1.27	1.00	89.74
	Bottom	1715	232.56	136.23	185.22	86.41	32.83	121.91	2356.50	6465.40	15025.20	107045.31	62632.32	1.27	1.00	5.98
33N	Top	1531	379.21	184.85	128.61	134.89	131.09	61.81	2361.80	6465.40	15025.20	133600.12	78169.57	1.27	1.00	3.31
	Bottom	1531	384.33	76.26	80.69	126.34	77.32	128.48	2361.80	6465.40	15025.20	133600.12	78169.57	1.27	1.00	3.75
34N	Top	1533	131.26	14	14.77	100.68	39.65	16.33	1534.00	4157.90	9123.20	52023.88	33933.53	1.28	1.00	4.11
	Bottom	1533	135.17	4.53	12.21	100.68	23.01	36.37	1534.00	4157.90	9123.20	52023.88	33933.53	1.28	1.00	4.21
35N	Top	1535	511.09	129.11	300.23	113.22	136.70	0.00	3478.90	8893.90	25654.00	113183.93	49191.86	1.24	1.00	5.98
	Bottom	1535	521.9	0	0	144.88	211.37	0.00	3478.90	8893.90	25654.00	113183.93	49191.86	1.24	1.00	4.56
36N	Top	1537	495.35	270.55	260.94	178.58	203.73	0.00	3521.30	8893.90	25654.00	257873.87	112076.82	1.25	1.00	3.81
	Bottom	1537	506.16	0	0	63.70	47.26	0.00	3521.30	8893.90	25654.00	257873.87	112076.82	1.25	1.00	12.78
14S	Top	1494	116.09	10.88	385.88	98.94	24.18	188.97	2135.60	5807.40	15091.10	181009.38	68088.58	1.27	1.00	5.11
	Bottom	1494	119.09	7.4	140.37	71.19	36.25	15.78	2135.60	5807.40	15091.10	181009.38	68088.58	1.27	1.00	8.14
15S	Top	1496	160.38	3.92	370.27	29.94	7.05	0.00	1876.40	5258.80	11036.20	111596.94	74298.51	1.29	1.00	17.46
	Bottom	1702	163.63	3.13	189.61	92.93	14.14	144.96	1876.40	5258.80	11036.20	111596.94	74298.51	1.29	1.00	4.72
16S	Top	1498	205.01	1.11	263.82	59.68	11.47	169.36	1875.30	5258.80	11036.20	103983.04	69229.36	1.29	1.00	739.32
	Bottom	1704	208.35	6.22	100.38	138.57	14.00	59.15	1875.30	5258.80	11036.20	103983.04	69229.36	1.29	1.00	3.68
17S	Top	1500	149.75	15.08	374.44	26.71	1.29	0.00	1871.40	5258.80	11036.20	82440.03	54886.55	1.29	1.00	20.91
	Bottom	1706	153.7	2.93	179.58	86.34	14.21	41.39	1871.40	5258.80	11036.20	82440.03	54886.55	1.29	1.00	5.92
18S	Top	1502	184.51	14.84	153.58	86.35	2.07	49.85	1649.00	4376.30	10124.90	73112.04	45014.22	1.29	1.00	5.14
	Bottom	1708	187.99	6.51	63.06	117.00	12.70	46.95	1649.00	4376.30	10124.90	73112.04	45014.22	1.29	1.00	3.83
19S	Top	1504	195.09	2.18	166.59	80.86	5.83	0.00	1647.80	4376.30	10124.90	68624.16	42251.08	1.29	1.00	5.86
	Bottom	1710	198.94	2.13	85.64	27.46	4.73	24.32	1647.80	4376.30	10124.90	68624.16	42251.08	1.29	1.00	14.72
20S	Top	1506	165.32	93.06	516.07	0.00	4.81	0.00	2173.60	6411.00	13022.80	61419.65	41623.62	1.28	1.00	398.64
	Bottom	1506	171.7	0	0	130.68	77.28	0.00	2173.60	6411.00	13022.80	61419.65	41623.62	1.28	1.00	4.47
21S	Top	1508	282.96	5.36	211.45	173.45	67.71	67.14	2621.60	7258.20	17136.00	103760.01	58906.39	1.27	1.00	3.85
	Bottom	1508	289.48	2.89	109.33	92.79	10.89	136.64	2621.60	7258.20	17136.00	103760.01	58906.39	1.27	1.00	6.83
22S	Top	1510	282.09	144.25	318.81	129.95	48.30	276.62	2734.80	7465.90	18178.40	120621.95	65891.76	1.27	1.00	4.27
	Bottom	1510	288.66	47.23	162.26	129.95	65.57	130.31	2734.80	7465.90	18178.40	120621.95	65891.76	1.27	1.00	4.81



Made By: GHD  
 Checked By: CTG

Date: 4/10/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					Rating Factor		
			Dead Load			5C1 (Max My)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips	IMPACT	Condition Equation	Opr.
23S	Top	1512	119.85	95.65	625.15	63.28	69.29	0.00	2818.40	7672.50	19226.80	73711.90	38813.92	1.28	1.00	10.07
	Bottom	1512	129	0	0	61.70	51.25	69.79	2818.40	7672.50	19226.80	73711.90	38813.92	1.28	1.00	249.06
24S	Top	1514	177.76	19.75	46.14	128.63	26.76	14.02	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	3.77
	Bottom	1514	182.39	4.2	23.57	128.63	48.25	5.88	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	3.66
25S	Top	1516	173.51	1.43	80	94.06	17.87	16.28	1704.20	6550.20	10846.40	44067.05	28571.79	1.29	1.00	5.14
	Bottom	1516	178.18	4.73	39.84	94.06	31.44	29.12	1704.20	6550.20	10846.40	44067.05	28571.79	1.29	1.00	4.87
26S	Top	1518	135.33	120.24	245.35	0.00	0.95	0.00	2162.40	5820.10	13949.00	49673.65	28402.55	1.28	1.00	1909.22
	Bottom	1518	142.8	0	0	117.34	87.00	0.00	2162.40	5820.10	13949.00	49673.65	28402.55	1.28	1.00	4.72
27S	Top	1520	216.4	48.11	194.5	167.21	43.69	0.00	1959.00	5390.00	11910.80	62461.78	39238.70	1.28	1.00	3.16
	Bottom	1712	221.73	29.6	85.42	167.21	18.15	47.97	1959.00	5390.00	11910.80	62461.78	39238.70	1.28	1.00	3.24
28S	Top	1522	218.96	101.84	156.84	75.63	5.88	15.34	1960.40	5390.00	11910.80	65488.22	41139.92	1.28	1.00	7.11
	Bottom	1714	224.19	54.69	70.48	100.78	21.92	48.03	1960.40	5390.00	11910.80	65488.22	41139.92	1.28	1.00	5.00
29S	Top	1524	158.65	107.95	263.55	35.68	61.22	0.00	2065.70	5606.10	12927.50	61732.28	36935.84	1.28	1.00	10.73
	Bottom	1524	164.69	0	0	79.07	16.35	21.75	2065.70	5606.10	12927.50	61732.28	36935.84	1.28	1.00	7.50
30S	Top	1526	240.32	79.03	115.07	108.27	30.39	82.19	1800.70	4896.30	11154.20	78305.20	48628.90	1.28	1.00	3.85
	Bottom	1526	244.39	40.1	51.65	108.27	49.51	33.71	1800.70	4896.30	11154.20	78305.20	48628.90	1.28	1.00	3.95
31S	Top	1528	241.39	73.07	130.24	11.93	52.98	0.82	1800.80	4896.30	11154.20	78427.17	48704.65	1.28	1.00	16.14
	Bottom	1528	245.46	46.95	55.51	102.17	25.88	79.31	1800.80	4896.30	11154.20	78427.17	48704.65	1.28	1.00	4.16
32S	Top	1530	130.23	70.87	25.89	113.36	48.64	36.32	1537.70	4157.90	9123.20	63164.35	41200.11	1.29	1.00	3.45
	Bottom	1530	133.84	47.56	5.65	109.02	88.55	16.88	1537.70	4157.90	9123.20	63164.35	41200.11	1.29	1.00	3.31
33S	Top	1532	334.39	105.09	1.34	106.05	51.01	66.51	1536.50	4157.90	9123.20	59113.10	38557.61	1.26	1.00	2.81
	Bottom	1532	338.06	24.43	13.98	115.92	88.13	30.17	1536.50	4157.90	9123.20	59113.10	38557.61	1.26	1.00	2.56
34S	Top	1534	109.45	150.18	187.79	68.79	116.18	76.40	2167.10	5582.10	13792.50	117071.73	65947.54	1.28	1.00	5.45
	Bottom	1534	114.29	64.5	98.73	60.11	38.49	134.34	2167.10	5582.10	13792.50	117071.73	65947.54	1.28	1.00	7.34
35S	Top	1536	441.13	282.31	288.88	44.44	35.16	0.00	3504.10	8893.90	25654.00	169625.93	73722.61	1.25	1.00	17.20
	Bottom	1536	450.3	0	0	177.81	228.14	0.00	3504.10	8893.90	25654.00	169625.93	73722.61	1.25	1.00	4.00
36S	Top	1538	456.54	144.69	320.16	132.47	225.71	0.00	3521.50	8893.90	25654.00	258957.37	112547.73	1.24	1.00	4.68
	Bottom	1538	465.71	0	0	117.62	170.07	0.00	3521.50	8893.90	25654.00	258957.37	112547.73	1.24	1.00	5.86



Made By: GHD  
 Checked By: CTG

Date: 4/10/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					Rating Factor		
			Dead Load			5C1 (Max Mz)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips	IMPACT	Condition Equation	Opr.
14N	Top	1493	129.11	13.37	437.53	51.44	0.00	260.49	2135.80	5807.40	15091.10	183481.77	69018.60	1.27	1.00	7.66
	Bottom	1493	132.1	4.35	159.87	51.44	3.41	101.49	2135.80	5807.40	15091.10	183481.77	69018.60	1.27	1.00	10.41
15N	Top	1495	181.85	2.99	421.78	0.02	0.00	0.81	1876.90	5258.80	11036.20	116218.33	77375.32	1.29	1.00	3495.88
	Bottom	1701	185.03	3.8	215.55	116.96	14.94	62.34	1876.90	5258.80	11036.20	116218.33	77375.32	1.29	1.00	4.27
16N	Top	1497	222.8	10.55	290.01	85.19	0.00	208.71	1876.40	5258.80	11036.20	112015.10	74576.91	1.29	1.00	4.47
	Bottom	1703	226.03	1.25	108.23	85.19	5.34	96.94	1876.40	5258.80	11036.20	112015.10	74576.91	1.29	1.00	5.35
17N	Top	1499	171.07	17.61	426.06	51.12	19.68	3.36	1873.80	5258.80	11036.20	94713.82	63058.14	1.29	1.00	9.39
	Bottom	1705	174.8	12.91	203.46	99.75	13.98	100.88	1873.80	5258.80	11036.20	94713.82	63058.14	1.29	1.00	4.66
18N	Top	1501	199.29	1.69	171.13	63.08	0.00	128.05	1651.50	4376.30	10124.90	84953.56	52304.90	1.29	1.00	5.75
	Bottom	1707	202.56	0.06	68.13	63.08	1.88	58.77	1651.50	4376.30	10124.90	84953.56	52304.90	1.29	1.00	6.69
19N	Top	1503	211.59	10.59	185.03	0.00	0.13	5.55	1650.40	4376.30	10124.90	79352.66	48856.49	1.29	1.00	497.62
	Bottom	1709	215.21	8.7	96.02	120.19	14.51	52.16	1650.40	4376.30	10124.90	79352.66	48856.49	1.29	1.00	3.59
20N	Top	1505	183.75	49.06	435.19	89.27	0.00	394.29	2349.90	6465.40	15025.20	85984.74	50309.76	1.28	1.00	4.71
	Bottom	1505	189.82	0	0	0.00	0.00	127.41	2349.90	6465.40	15025.20	85984.74	50309.76	1.28	1.00	37.81
21N	Top	1507	372.95	55.44	36.51	105.14	6.81	274.41	2278.20	5791.70	14821.40	128698.63	69474.54	1.26	1.00	4.28
	Bottom	1507	377.77	27.53	29.74	99.68	37.92	242.79	2278.20	5791.70	14821.40	128698.63	69474.54	1.26	1.00	4.24
22N	Top	1509	300.78	113.72	111.65	74.07	15.71	117.03	2134.60	6038.60	12978.30	88759.06	56897.31	1.27	1.00	6.08
	Bottom	1509	305.69	26.32	71.96	92.00	42.50	187.48	2134.60	6038.60	12978.30	88759.06	56897.31	1.27	1.00	4.46
23N	Top	1511	104.65	2.86	41.58	0.00	0.00	51.08	1634.10	4376.30	10124.90	40198.84	24749.95	1.30	1.00	63.87
	Bottom	1511	108.67	0	0	77.39	0.00	92.37	1634.10	4376.30	10124.90	40198.84	24749.95	1.30	1.00	5.70
24N	Top	1513	203.13	16.61	52.8	77.13	10.15	43.88	1707.60	6550.20	10846.40	49478.05	32080.12	1.29	1.00	5.85
	Bottom	1513	207.56	1.75	22.77	77.13	20.66	22.25	1707.60	6550.20	10846.40	49478.05	32080.12	1.29	1.00	5.93
25N	Top	1515	209.86	18.58	68.68	8.78	0.00	17.83	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	43.02
	Bottom	1515	214.33	13.96	39	130.13	5.87	45.06	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	3.63
26N	Top	1517	120.4	87.54	285.14	57.08	0.00	164.83	2166.10	5820.10	13949.00	53573.69	30632.52	1.29	1.00	8.14
	Bottom	1517	127.62	0	0	33.68	3.60	4.00	2166.10	5820.10	13949.00	53573.69	30632.52	1.29	1.00	20.08
27N	Top	1519	231.3	101.15	160.65	81.70	33.16	20.24	1959.60	5390.00	11910.80	63775.61	40064.05	1.29	1.00	5.79
	Bottom	1711	236.59	57.22	75	65.56	18.32	35.81	1959.60	5390.00	11910.80	63775.61	40064.05	1.29	1.00	7.35
28N	Top	1521	232.66	43.13	189.1	147.21	7.70	104.72	1961.00	5390.00	11910.80	66899.22	42026.32	1.29	1.00	3.41
	Bottom	1713	237.85	24.35	79.31	147.21	5.25	51.49	1961.00	5390.00	11910.80	66899.22	42026.32	1.29	1.00	3.68
29N	Top	1523	194.15	129.59	241.85	0.00	1.80	6.96	2063.80	5606.10	12927.50	58454.03	34974.38	1.29	1.00	341.31
	Bottom	1523	200.32	0	0	111.51	0.00	133.94	2063.80	5606.10	12927.50	58454.03	34974.38	1.29	1.00	4.83



Made By: GHD  
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Date: 4/10/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					Rating Factor		
			Dead Load			5C1 (Max Mz)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips	IMPACT	Condition Equation	Opr.
30N	Top	1525	261.42	57.7	116.49	103.78	14.09	85.45	1797.90	4896.30	11154.20	68492.86	42535.26	1.28	1.00	4.10
	Bottom	1525	265.73	26.48	46.58	136.58	15.52	44.28	1797.90	4896.30	11154.20	68492.86	42535.26	1.28	1.00	3.44
31N	Top	1527	261.87	94.44	135.17	80.01	44.07	27.66	1799.50	4896.30	11154.20	73706.03	45772.73	1.28	1.00	4.93
	Bottom	1527	266.05	60.56	66.18	96.09	29.06	65.83	1799.50	4896.30	11154.20	73706.03	45772.73	1.28	1.00	4.31
32N	Top	1529	225.84	282.11	524.59	86.41	0.00	342.82	2356.50	6465.40	15025.20	107045.31	62632.32	1.27	1.00	4.67
	Bottom	1715	232.56	136.23	185.22	86.41	32.83	121.91	2356.50	6465.40	15025.20	107045.31	62632.32	1.27	1.00	5.98
33N	Top	1531	379.21	184.85	128.61	126.34	130.77	62.32	2361.80	6465.40	15025.20	133600.12	78169.57	1.27	1.00	3.46
	Bottom	1531	384.33	76.26	80.69	126.34	77.32	128.48	2361.80	6465.40	15025.20	133600.12	78169.57	1.27	1.00	3.75
34N	Top	1533	131.26	14	14.77	0.00	8.90	29.50	1534.00	4157.90	9123.20	52023.88	33933.53	1.28	1.00	58.85
	Bottom	1533	135.17	4.53	12.21	105.06	21.57	41.87	1534.00	4157.90	9123.20	52023.88	33933.53	1.28	1.00	4.04
35N	Top	1535	511.09	129.11	300.23	144.88	0.00	212.74	3478.90	8893.90	25654.00	113183.93	49191.86	1.24	1.00	5.72
	Bottom	1535	521.9	0	0	101.88	0.00	91.82	3478.90	8893.90	25654.00	113183.93	49191.86	1.24	1.00	9.08
36N	Top	1537	495.35	270.55	260.94	7.67	0.00	49.79	3521.30	8893.90	25654.00	257873.87	112076.82	1.25	1.00	67.77
	Bottom	1537	506.16	0	0	171.79	0.00	152.81	3521.30	8893.90	25654.00	257873.87	112076.82	1.25	1.00	5.46
14S	Top	1494	116.09	10.88	385.88	49.05	2.88	243.59	2135.60	5807.40	15091.10	181009.38	68088.58	1.27	1.00	8.12
	Bottom	1494	119.09	7.4	140.37	49.05	0.00	93.71	2135.60	5807.40	15091.10	181009.38	68088.58	1.27	1.00	11.30
15S	Top	1496	160.38	3.92	370.27	0.01	0.00	2.13	1876.40	5258.80	11036.20	111596.94	74298.51	1.29	1.00	1521.63
	Bottom	1702	163.63	3.13	189.61	111.41	5.20	59.99	1876.40	5258.80	11036.20	111596.94	74298.51	1.29	1.00	4.69
16S	Top	1498	205.01	1.11	263.82	92.91	10.44	216.06	1875.30	5258.80	11036.20	103983.04	69229.36	1.29	1.00	4.14
	Bottom	1704	208.35	6.22	100.38	92.91	0.00	99.93	1875.30	5258.80	11036.20	103983.04	69229.36	1.29	1.00	5.13
17S	Top	1500	149.75	15.08	374.44	0.23	0.19	3.19	1871.40	5258.80	11036.20	82440.03	54886.55	1.29	1.00	672.95
	Bottom	1706	153.7	2.93	179.58	106.01	1.88	112.50	1871.40	5258.80	11036.20	82440.03	54886.55	1.29	1.00	4.63
18S	Top	1502	184.51	14.84	153.58	72.79	0.00	135.09	1649.00	4376.30	10124.90	73112.04	45014.22	1.29	1.00	5.14
	Bottom	1708	187.99	6.51	63.06	72.79	2.56	62.15	1649.00	4376.30	10124.90	73112.04	45014.22	1.29	1.00	5.91
19S	Top	1504	195.09	2.18	166.59	13.04	0.00	5.04	1647.80	4376.30	10124.90	68624.16	42251.08	1.29	1.00	35.01
	Bottom	1710	198.94	2.13	85.64	132.21	0.23	61.27	1647.80	4376.30	10124.90	68624.16	42251.08	1.29	1.00	3.44
20S	Top	1506	165.32	93.06	516.07	88.53	0.00	405.04	2173.60	6411.00	13022.80	61419.65	41623.62	1.28	1.00	4.12
	Bottom	1506	171.7	0	0	0.00	0.00	41.88	2173.60	6411.00	13022.80	61419.65	41623.62	1.28	1.00	100.31
21S	Top	1508	282.96	5.36	211.45	131.16	39.26	82.80	2621.60	7258.20	17136.00	103760.01	58906.39	1.27	1.00	5.07
	Bottom	1508	289.48	2.89	109.33	131.16	10.30	158.36	2621.60	7258.20	17136.00	103760.01	58906.39	1.27	1.00	5.05
22S	Top	1510	282.09	144.25	318.81	129.95	48.30	276.62	2734.80	7465.90	18178.40	120621.95	65891.76	1.27	1.00	4.27
	Bottom	1510	288.66	47.23	162.26	129.95	65.57	130.31	2734.80	7465.90	18178.40	120621.95	65891.76	1.27	1.00	4.81





Made By: GHD  
 Checked By: CTG

Date: 4/10/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					Rating Factor		
			Dead Load			5C1 (Max Mz)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips	IMPACT	Condition Equation	Opr.
23S	Top	1512	119.85	95.65	625.15	0.00	0.00	35.82	2818.40	7672.50	19226.80	73711.90	38813.92	1.28	1.00	171.21
	Bottom	1512	129	0	0	70.09	0.00	428.47	2818.40	7672.50	19226.80	73711.90	38813.92	1.28	1.00	7.07
24S	Top	1514	177.76	19.75	46.14	83.69	10.97	38.78	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	5.59
	Bottom	1514	182.39	4.2	23.57	83.69	17.55	18.46	1704.90	6550.20	10846.40	45126.85	29258.93	1.29	1.00	5.71
25S	Top	1516	173.51	1.43	80	119.78	8.18	31.87	1704.20	6550.20	10846.40	44067.05	28571.79	1.29	1.00	4.10
	Bottom	1516	178.18	4.73	39.84	119.78	16.46	65.33	1704.20	6550.20	10846.40	44067.05	28571.79	1.29	1.00	3.87
26S	Top	1518	135.33	120.24	245.35	49.92	0.00	179.94	2162.40	5820.10	13949.00	49673.65	28402.55	1.28	1.00	8.52
	Bottom	1518	142.8	0	0	51.74	28.48	28.35	2162.40	5820.10	13949.00	49673.65	28402.55	1.28	1.00	207.90
27S	Top	1520	216.4	48.11	194.5	0.03	0.37	3.00	1959.00	5390.00	11910.80	62461.78	39238.70	1.28	1.00	875.71
	Bottom	1712	221.73	29.6	85.42	169.00	17.66	48.44	1959.00	5390.00	11910.80	62461.78	39238.70	1.28	1.00	3.20
28S	Top	1522	218.96	101.84	156.84	100.78	0.00	105.47	1960.40	5390.00	11910.80	65488.22	41139.92	1.28	1.00	4.82
	Bottom	1714	224.19	54.69	70.48	100.78	21.92	48.03	1960.40	5390.00	11910.80	65488.22	41139.92	1.28	1.00	5.00
29S	Top	1524	158.65	107.95	263.55	0.33	0.25	2.22	2065.70	5606.10	12927.50	61732.28	36935.84	1.28	1.00	800.38
	Bottom	1524	164.69	0	0	118.86	0.00	193.52	2065.70	5606.10	12927.50	61732.28	36935.84	1.28	1.00	4.41
30S	Top	1526	240.32	79.03	115.07	135.38	28.83	92.60	1800.70	4896.30	11154.20	78305.20	48628.90	1.28	1.00	3.17
	Bottom	1526	244.39	40.1	51.65	135.38	43.98	37.32	1800.70	4896.30	11154.20	78305.20	48628.90	1.28	1.00	3.31
31S	Top	1528	241.39	73.07	130.24	138.37	28.69	49.08	1800.80	4896.30	11154.20	78427.17	48704.65	1.28	1.00	3.26
	Bottom	1528	245.46	46.95	55.51	138.37	12.80	96.07	1800.80	4896.30	11154.20	78427.17	48704.65	1.28	1.00	3.27
32S	Top	1530	130.23	70.87	25.89	48.78	34.88	62.11	1537.70	4157.90	9123.20	63164.35	41200.11	1.29	1.00	6.56
	Bottom	1530	133.84	47.56	5.65	0.00	15.19	36.30	1537.70	4157.90	9123.20	63164.35	41200.11	1.29	1.00	40.79
33S	Top	1532	334.39	105.09	1.34	0.00	9.62	66.51	1536.50	4157.90	9123.20	59113.10	38557.61	1.26	1.00	25.77
	Bottom	1532	338.06	24.43	13.98	130.36	20.26	54.90	1536.50	4157.90	9123.20	59113.10	38557.61	1.26	1.00	2.68
34S	Top	1534	109.45	150.18	187.79	87.41	106.93	79.24	2167.10	5582.10	13792.50	117071.73	65947.54	1.28	1.00	4.86
	Bottom	1534	114.29	64.5	98.73	87.41	33.95	147.39	2167.10	5582.10	13792.50	117071.73	65947.54	1.28	1.00	5.71
35S	Top	1536	441.13	282.31	288.88	155.30	0.00	183.75	3504.10	8893.90	25654.00	169625.93	73722.61	1.25	1.00	5.55
	Bottom	1536	450.3	0	0	51.63	0.00	47.60	3504.10	8893.90	25654.00	169625.93	73722.61	1.25	1.00	18.42
36S	Top	1538	456.54	144.69	320.16	107.16	0.00	105.42	3521.50	8893.90	25654.00	258957.37	112547.73	1.24	1.00	8.54
	Bottom	1538	465.71	0	0	139.30	0.00	244.67	3521.50	8893.90	25654.00	258957.37	112547.73	1.24	1.00	6.26



Made By: CTG  
 Checked By: DMP

Date: 4/13/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					$\frac{P}{P_u} + \frac{MC}{M_u \left(1 - \frac{P}{A_s F_e}\right)} \leq 1.0$		Rating Factor	
			Dead Load			HS20 (Max P)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>				
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips	IMPACT	Condition Equation	Inv.	Opr.
15N	Top	1495	181.85	2.99	421.78	146.32	28.13	0.00	1876.90	5258.80	11036.20	116218.33	77375.32	1.29	1.00	3.54	5.91
	Bottom	1701	185.03	3.8	215.55	146.32	27.12	40.94	1788.10	5160.00	10638.00	112024.66	74750.34	1.29	1.00	3.30	5.51
17N	Top	1499	171.07	17.61	426.06	139.91	31.44	0.00	1873.80	5258.80	11036.20	94713.82	63058.14	1.29	1.00	3.65	6.10
	Bottom	1705	174.8	12.91	203.46	139.91	23.37	42.19	1653.80	4279.80	10030.10	86079.60	52312.51	1.29	1.00	3.14	5.25
14S	Top	1494	116.09	10.88	385.88	128.12	33.29	200.79	2135.60	5807.40	15091.10	181009.38	68088.58	1.27	1.00	4.08	6.81
	Bottom	1494	119.09	7.4	140.37	128.12	49.73	77.62	2088.10	5715.00	14904.40	178770.11	67372.32	1.27	1.00	4.38	7.32



Made By: CTG  
 Checked By: DMP

Date: 4/13/2012  
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Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					$\frac{P}{P_u} + \frac{MC}{M_u} \left( 1 - \frac{P}{A_s F_e} \right) \leq 1.0$		Rating Factor	
			Dead Load			HS20 (Max My)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>				
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips	IMPACT	Condition Equation	Inv.	Opr.
15N	Top	1495	181.85	2.99	421.78	112.07	32.69	0.00	1876.90	5258.80	11036.20	116218.33	77375.32	1.29	1.00	4.47	7.46
	Bottom	1701	185.03	3.8	215.55	145.30	29.26	30.60	1788.10	5160.00	10638.00	112024.66	74750.34	1.29	1.00	3.34	5.58
17N	Top	1499	171.07	17.61	426.06	134.84	33.31	0.00	1873.80	5258.80	11036.20	94713.82	63058.14	1.29	1.00	3.76	6.28
	Bottom	1705	174.8	12.91	203.46	134.84	23.92	32.57	1653.80	4279.80	10030.10	86079.60	52312.51	1.29	1.00	3.28	5.48
14S	Top	1494	116.09	10.88	385.88	128.12	33.29	200.79	2135.60	5807.40	15091.10	181009.38	68088.58	1.27	1.00	4.08	6.82
	Bottom	1494	119.09	7.4	140.37	128.12	49.73	77.62	2088.10	5715.00	14904.40	178770.11	67372.32	1.27	1.00	4.38	7.32



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Date: 4/13/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					$\frac{P}{P_u} + \frac{MC}{M_u \left(1 - \frac{P}{A_s F_c}\right)} \leq 1.0$		Rating Factor	
			Dead Load			HS20 (Max Mz)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>				
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips	IMPACT	Condition Equation	Inv.	Opr.
15N	Top	1495	181.85	2.99	421.78	62.80	19.59	2.40	1876.90	5258.80	11036.20	116218.33	77375.32	1.29	1.00	7.87	13.15
	Bottom	1701	185.03	3.8	215.55	109.17	6.28	91.08	1788.10	5160.00	10638.00	112024.66	74750.34	1.29	1.00	4.23	7.06
17N	Top	1499	171.07	17.61	426.06	0.00	0.13	20.79	1873.80	5258.80	11036.20	94713.82	63058.14	1.29	1.00	154.18	257.47
	Bottom	1705	174.8	12.91	203.46	64.27	4.06	133.48	1653.80	4279.80	10030.10	86079.60	52312.51	1.29	1.00	5.56	9.28
14S	Top	1494	116.09	10.88	385.88	74.43	5.71	351.41	2135.60	5807.40	15091.10	181009.38	68088.58	1.27	1.00	5.44	9.09
	Bottom	1494	119.09	7.4	140.37	74.43	0.14	135.59	2088.10	5715.00	14904.40	178770.11	67372.32	1.27	1.00	7.35	12.28



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Date: 4/13/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					$\frac{P}{P_u} + \frac{MC}{M_u \left(1 - \frac{P}{A_s F_c}\right)} \leq 1.0$		Rating Factor
			Dead Load			2F1 (Max P)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips			Opr.
15N	Top	1495	181.85	2.99	421.78	68.30	20.21	0.00	1876.90	5258.80	11036.20	116218.33	77375.32	1.29	1.00	7.32
	Bottom	1701	185.03	3.8	215.55	68.30	15.61	8.01	1788.10	5160.00	10638.00	112024.66	74750.34	1.29	1.00	7.15
17N	Top	1499	171.07	17.61	426.06	65.07	14.71	0.00	1873.80	5258.80	11036.20	94713.82	63058.14	1.29	1.00	7.85
	Bottom	1705	174.8	12.91	203.46	65.07	11.16	11.87	1653.80	4279.80	10030.10	86079.60	52312.51	1.29	1.00	6.87
14S	Top	1494	116.09	10.88	385.88	56.71	15.63	73.39	2135.60	5807.40	15091.10	181009.38	68088.58	1.27	1.00	9.47
	Bottom	1494	119.09	7.4	140.37	56.71	23.91	28.39	2088.10	5715.00	14904.40	178770.11	67372.32	1.27	1.00	9.92



Made By: CTG  
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Date: 4/13/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					$\frac{P}{P_u} + \frac{MC}{M_u \left(1 - \frac{P}{A_s F_c}\right)} \leq 1.0$		Rating Factor
			Dead Load			2F1 (Max My)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips	IMPACT	Condition Equation	Opr.
15N	Top	1495	181.85	2.99	421.78	68.30	20.21	0.00	1876.90	5258.80	11036.20	116218.33	77375.32	1.29	1.00	7.32
	Bottom	1701	185.03	3.8	215.55	68.30	15.61	8.01	1788.10	5160.00	10638.00	112024.66	74750.34	1.29	1.00	7.15
17N	Top	1499	171.07	17.61	426.06	64.19	16.56	0.00	1873.80	5258.80	11036.20	94713.82	63058.14	1.29	1.00	7.87
	Bottom	1705	174.8	12.91	203.46	64.19	11.92	7.10	1653.80	4279.80	10030.10	86079.60	52312.51	1.29	1.00	7.01
14S	Top	1494	116.09	10.88	385.88	45.40	16.49	0.43	2135.60	5807.40	15091.10	181009.38	68088.58	1.27	1.00	13.41
	Bottom	1494	119.09	7.4	140.37	45.40	28.16	0.27	2088.10	5715.00	14904.40	178770.11	67372.32	1.27	1.00	12.37



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Date: 4/13/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					$\frac{P}{P_u} + \frac{MC}{M_u \left(1 - \frac{P}{A_s F_e}\right)} \leq 1.0$		Rating Factor
			Dead Load			2F1 (Max Mz)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips			Opr.
15N	Top	1495	181.85	2.99	421.78	16.56	5.24	2.33	1876.90	5258.80	11036.20	116218.33	77375.32	1.29	1.00	29.36
	Bottom	1701	185.03	3.8	215.55	46.91	2.23	42.10	1788.10	5160.00	10638.00	112024.66	74750.34	1.29	1.00	9.78
17N	Top	1499	171.07	17.61	426.06	0.00	0.04	15.40	1873.80	5258.80	11036.20	94713.82	63058.14	1.29	1.00	209.72
	Bottom	1705	174.8	12.91	203.46	26.80	0.92	69.72	1653.80	4279.80	10030.10	86079.60	52312.51	1.29	1.00	12.62
14S	Top	1494	116.09	10.88	385.88	30.38	2.27	162.53	2135.60	5807.40	15091.10	181009.38	68088.58	1.27	1.00	12.67
	Bottom	1494	119.09	7.4	140.37	30.38	0.00	62.70	2088.10	5715.00	14904.40	178770.11	67372.32	1.27	1.00	17.54



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Date: 4/13/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					$\frac{P}{P_u} + \frac{MC}{M_u \left(1 - \frac{P}{A_s F_e}\right)} \leq 1.0$		Rating Factor
			Dead Load			3F1 (Max P)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>	IMPACT	Condition Equation	
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips			Opr.
15N	Top	1495	181.85	2.99	421.78	102.66	26.33	0.00	1876.90	5258.80	11036.20	116218.33	77375.32	1.29	1.00	4.94
	Bottom	1701	185.03	3.8	215.55	102.66	21.84	17.95	1788.10	5160.00	10638.00	112024.66	74750.34	1.29	1.00	4.74
17N	Top	1499	171.07	17.61	426.06	97.96	23.60	0.00	1873.80	5258.80	11036.20	94713.82	63058.14	1.29	1.00	5.19
	Bottom	1705	174.8	12.91	203.46	97.96	17.40	16.31	1653.80	4279.80	10030.10	86079.60	52312.51	1.29	1.00	4.57
14S	Top	1494	116.09	10.88	385.88	84.57	22.39	125.58	2135.60	5807.40	15091.10	181009.38	68088.58	1.27	1.00	6.23
	Bottom	1494	119.09	7.4	140.37	84.57	33.70	48.55	2088.10	5715.00	14904.40	178770.11	67372.32	1.27	1.00	6.64





Made By: CTG  
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Date: 4/13/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					$\frac{P}{P_u} + \frac{MC}{M_u \left(1 - \frac{P}{A_s F_e}\right)} \leq 1.0$		Rating Factor
			Dead Load			3F1 (Max My)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips			Opr.
15N	Top	1495	181.85	2.99	421.78	102.66	26.33	0.00	1876.90	5258.80	11036.20	116218.33	77375.32	1.29	1.00	4.94
	Bottom	1701	185.03	3.8	215.55	99.83	22.19	11.77	1788.10	5160.00	10638.00	112024.66	74750.34	1.29	1.00	4.90
17N	Top	1499	171.07	17.61	426.06	95.68	25.35	0.00	1873.80	5258.80	11036.20	94713.82	63058.14	1.29	1.00	5.27
	Bottom	1705	174.8	12.91	203.46	95.68	18.05	9.48	1653.80	4279.80	10030.10	86079.60	52312.51	1.29	1.00	4.71
14S	Top	1494	116.09	10.88	385.88	71.19	22.58	40.56	2135.60	5807.40	15091.10	181009.38	68088.58	1.27	1.00	8.10
	Bottom	1494	119.09	7.4	140.37	71.19	36.25	15.78	2088.10	5715.00	14904.40	178770.11	67372.32	1.27	1.00	7.95



Made By: CTG  
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Date: 4/13/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					$\frac{P}{P_u} + \frac{MC}{M_u \left(1 - \frac{P}{A_s F_c}\right)} \leq 1.0$		Rating Factor
			Dead Load			3F1 (Max Mz)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>	IMPACT	Condition Equation	
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips			Opr.
15N	Top	1495	181.85	2.99	421.78	31.80	9.83	3.37	1876.90	5258.80	11036.20	116218.33	77375.32	1.29	1.00	15.41
	Bottom	1701	185.03	3.8	215.55	68.35	3.51	63.84	1788.10	5160.00	10638.00	112024.66	74750.34	1.29	1.00	6.67
17N	Top	1499	171.07	17.61	426.06	0.00	0.05	22.35	1873.80	5258.80	11036.20	94713.82	63058.14	1.29	1.00	144.62
	Bottom	1705	174.8	12.91	203.46	96.64	25.44	102.32	1653.80	4279.80	10030.10	86079.60	52312.51	1.29	1.00	3.96
14S	Top	1494	116.09	10.88	385.88	49.92	3.24	246.36	2135.60	5807.40	15091.10	181009.38	68088.58	1.27	1.00	7.99
	Bottom	1494	119.09	7.4	140.37	49.92	0.00	95.04	2088.10	5715.00	14904.40	178770.11	67372.32	1.27	1.00	10.87



Made By: CTG  
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Date: 4/13/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					$\frac{P}{P_u} + \frac{MC}{M_u \left(1 - \frac{P}{A_s F_e}\right)} \leq 1.0$		Rating Factor
			Dead Load			4F1 (Max P)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips			Opr.
15N	Top	1495	181.85	2.99	421.78	19.04	63.10	0.00	1876.90	5258.80	11036.20	116218.33	77375.32	1.29	1.00	13.27
	Bottom	1701	185.03	3.8	215.55	19.04	21.69	4.08	1788.10	5160.00	10638.00	112024.66	74750.34	1.29	1.00	19.65
17N	Top	1499	171.07	17.61	426.06	17.82	54.75	0.00	1873.80	5258.80	11036.20	94713.82	63058.14	1.29	1.00	14.73
	Bottom	1705	174.8	12.91	203.46	17.82	19.33	3.04	1653.80	4279.80	10030.10	86079.60	52312.51	1.29	1.00	18.97
14S	Top	1494	116.09	10.88	385.88	96.93	25.19	158.75	2135.60	5807.40	15091.10	181009.38	68088.58	1.27	1.00	5.35
	Bottom	1494	119.09	7.4	140.37	96.93	38.01	61.35	2088.10	5715.00	14904.40	178770.11	67372.32	1.27	1.00	5.77



Made By: CTG  
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Date: 4/13/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_c} \right)} \leq 1.0$		Rating Factor
			Dead Load			4F1 (Max My)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips			Opr.
15N	Top	1495	181.85	2.99	421.78	18.38	64.04	0.00	1876.90	5258.80	11036.20	116218.33	77375.32	1.29	1.00	13.37
	Bottom	1701	185.03	3.8	215.55	18.38	21.88	2.50	1788.10	5160.00	10638.00	112024.66	74750.34	1.29	1.00	20.29
17N	Top	1499	171.07	17.61	426.06	17.38	54.79	0.00	1873.80	5258.80	11036.20	94713.82	63058.14	1.29	1.00	14.90
	Bottom	1705	174.8	12.91	203.46	17.82	19.33	3.04	1653.80	4279.80	10030.10	86079.60	52312.51	1.29	1.00	18.97
14S	Top	1494	116.09	10.88	385.88	86.10	26.59	61.66	2135.60	5807.40	15091.10	181009.38	68088.58	1.27	1.00	6.59
	Bottom	1494	119.09	7.4	140.37	86.10	42.32	23.94	2088.10	5715.00	14904.40	178770.11	67372.32	1.27	1.00	6.57



Made By: CTG  
 Checked By: DMP

Date: 4/13/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					$\frac{P}{P_u} + \frac{MC}{M_u \left(1 - \frac{P}{A_s F_c}\right)} \leq 1.0$		Rating Factor
			Dead Load			4F1 (Max Mz)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>	IMPACT	Condition Equation	
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips			Opr.
15N	Top	1495	181.85	2.99	421.78	7.07	31.05	1.63	1876.90	5258.80	11036.20	116218.33	77375.32	1.29	1.00	29.93
	Bottom	1701	185.03	3.8	215.55	13.53	0.00	15.83	1788.10	5160.00	10638.00	112024.66	74750.34	1.29	1.00	33.07
17N	Top	1499	171.07	17.61	426.06	0.00	0.00	6.12	1873.80	5258.80	11036.20	94713.82	63058.14	1.29	1.00	530.61
	Bottom	1705	174.8	12.91	203.46	69.00	17.34	19.91	1653.80	4279.80	10030.10	86079.60	52312.51	1.29	1.00	6.20
14S	Top	1494	116.09	10.88	385.88	56.49	3.37	283.74	2135.60	5807.40	15091.10	181009.38	68088.58	1.27	1.00	7.02
	Bottom	1494	119.09	7.4	140.37	56.49	0.00	109.46	2088.10	5715.00	14904.40	178770.11	67372.32	1.27	1.00	9.57



Made By: CTG  
 Checked By: DMP

Date: 4/13/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					$\frac{P}{P_u} + \frac{MC}{M_u \left(1 - \frac{P}{A_s F_e}\right)} \leq 1.0$		Rating Factor
			Dead Load			5C1 (Max P)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>	IMPACT	Condition Equation	
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips			Opr.
15N	Top	1495	181.85	2.99	421.78	124.81	15.21	0.00	1876.90	5258.80	11036.20	116218.33	77375.32	1.29	1.00	4.25
	Bottom	1701	185.03	3.8	215.55	124.81	17.96	57.03	1788.10	5160.00	10638.00	112024.66	74750.34	1.29	1.00	3.81
17N	Top	1499	171.07	17.61	426.06	105.20	22.94	0.00	1873.80	5258.80	11036.20	94713.82	63058.14	1.29	1.00	4.87
	Bottom	1705	174.8	12.91	203.46	105.20	15.74	85.01	1653.80	4279.80	10030.10	86079.60	52312.51	1.29	1.00	3.91
14S	Top	1494	116.09	10.88	385.88	98.94	24.18	188.97	2135.60	5807.40	15091.10	181009.38	68088.58	1.27	1.00	5.11
	Bottom	1494	119.09	7.4	140.37	98.94	35.72	73.07	2088.10	5715.00	14904.40	178770.11	67372.32	1.27	1.00	5.63



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Date: 4/13/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					$\frac{P}{P_u} + \frac{MC}{M_u \left(1 - \frac{P}{A_s F_c}\right)} \leq 1.0$		Rating Factor
			Dead Load			5C1 (Max My)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips			Opr.
15N	Top	1495	181.85	2.99	421.78	89.01	27.51	0.00	1876.90	5258.80	11036.20	116218.33	77375.32	1.29	1.00	5.60
	Bottom	1701	185.03	3.8	215.55	89.01	22.03	12.82	1788.10	5160.00	10638.00	112024.66	74750.34	1.29	1.00	5.43
17N	Top	1499	171.07	17.61	426.06	93.84	23.73	0.00	1873.80	5258.80	11036.20	94713.82	63058.14	1.29	1.00	5.39
	Bottom	1705	174.8	12.91	203.46	11.11	17.49	0.00	1653.80	4279.80	10030.10	86079.60	52312.51	1.29	1.00	27.37
14S	Top	1494	116.09	10.88	385.88	98.94	24.18	188.97	2135.60	5807.40	15091.10	181009.38	68088.58	1.27	1.00	5.11
	Bottom	1494	119.09	7.4	140.37	71.19	36.25	15.78	2088.10	5715.00	14904.40	178770.11	67372.32	1.27	1.00	7.95



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Date: 4/13/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

COLUMNS			SERVICE LOADS						CAPACITIES					$\frac{P}{P_u} + \frac{MC}{M_u \left(1 - \frac{P}{A_s F_e}\right)} \leq 1.0$		Rating Factor
			Dead Load			5C1 (Max Mz)			P <sub>u</sub>	M <sub>uy</sub>	M <sub>uz</sub>	A <sub>s</sub> F <sub>ey</sub>	A <sub>s</sub> F <sub>ez</sub>			
Column	Location	STAAD Beam	P (kips)	My (k-ft)	Mz (k-ft)	P (kips)	My (k-ft)	Mz (k-ft)	kips	k-ft	k-ft	kips	kips			Opr.
15N	Top	1495	181.85	2.99	421.78	0.02	0.00	0.81	1876.90	5258.80	11036.20	116218.33	77375.32	1.29	1.00	3495.88
	Bottom	1701	185.03	3.8	215.55	116.96	14.94	62.34	1788.10	5160.00	10638.00	112024.66	74750.34	1.29	1.00	4.04
17N	Top	1499	171.07	17.61	426.06	51.12	19.68	3.36	1873.80	5258.80	11036.20	94713.82	63058.14	1.29	1.00	9.39
	Bottom	1705	174.8	12.91	203.46	99.75	13.98	100.88	1653.80	4279.80	10030.10	86079.60	52312.51	1.29	1.00	4.02
14S	Top	1494	116.09	10.88	385.88	49.05	2.88	243.59	2135.60	5807.40	15091.10	181009.38	68088.58	1.27	1.00	8.12
	Bottom	1494	119.09	7.4	140.37	49.05	0.00	93.71	2088.10	5715.00	14904.40	178770.11	67372.32	1.27	1.00	11.05





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Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

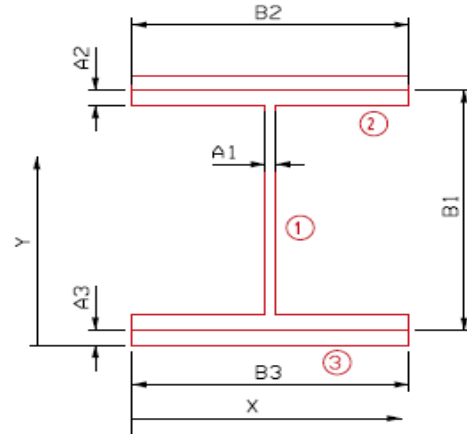
**Element Dimensions (without Section Losses):**

Rolled Beam

- $A_1 = t_w = 0.7000$  in
- $A_2 = t_f = 1.1280$  in
- $B_1 = d = 14.8800$  in
- $B_2 = b_f = 15.5200$  in

Cover Plate

- $A_3 = t = 1.0000$  in
- $B_3 = b = 16.5000$  in



**Bent 14 North Column**

X-Axis Section Properties:

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web Plate		8.8368	8.4400	74.5826	117.3567	0.0000	0.0000	117.3567
2	Left Flange		17.5066	1.5640	27.3803	1.8563	6.8760	827.6992	829.5555
	Right Flange		17.5066	15.3160	268.1305	1.8563	6.8760	827.6992	829.5555
3	Left Plate		16.5000	0.5000	8.2500	1.3750	7.9400	1040.2194	1041.5944
	Right Plate		16.5000	16.3800	270.2700	1.3750	7.9400	1040.2194	1041.5944
<b>Total</b>			<b>76.85</b>		<b>648.61</b>	<b>123.82</b>		<b>3735.84</b>	<b>3859.66</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	8.4400	in	$S_{top} = 457.31$	$in^3$	y-bar =	8.4400	in	$S_{top} = 457.31$	$in^3$		
$I_x =$	3859.66	$in^4$	$S_{bott.} = 457.31$	$in^3$	$I_x =$	3859.66	$in^4$	$S_{bott.} = 457.31$	$in^3$		
$C_{top} =$	8.4400	in	A =	76.8499	$in^2$	$C_{top} =$	8.4400	in	A =	76.8499	$in^2$
$C_{bottom} =$	8.4400	in	$r_x =$	7.0868	in	$C_{bottom} =$	8.4400	in	$r_x =$	7.0868	in



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Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web Plate		8.8368	8.2500	72.9036	0.3608	0.0000	0.0000	0.3608
2	Flange Plates		35.0131	8.2500	288.8582	702.8020	0.0000	0.0000	702.8020
3	Cover Plate		33.0000	8.2500	272.2500	748.6875	0.0000	0.0000	748.6875
<b>Total</b>			<b>76.85</b>		<b>634.01</b>	<b>1451.85</b>		<b>0.00</b>	<b>1451.85</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	8.2500	in	S <sub>right</sub> = 175.98 in <sup>3</sup>	x-bar =	8.2500	in	S <sub>right</sub> = 175.98 in <sup>3</sup>
I <sub>y</sub> =	1451.85	in <sup>4</sup>	S <sub>left</sub> = 175.98 in <sup>3</sup>	I <sub>y</sub> =	1451.85	in <sup>4</sup>	S <sub>left</sub> = 175.98 in <sup>3</sup>
C <sub>right</sub> =	8.2500	in	A = 76.8499 in <sup>2</sup>	C <sub>right</sub> =	8.2500	in	A = 76.8499 in <sup>2</sup>
C <sub>left</sub> =	8.2500	in	r <sub>y</sub> = 4.3465 in	C <sub>left</sub> =	8.2500	in	r <sub>y</sub> = 4.3465 in



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Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

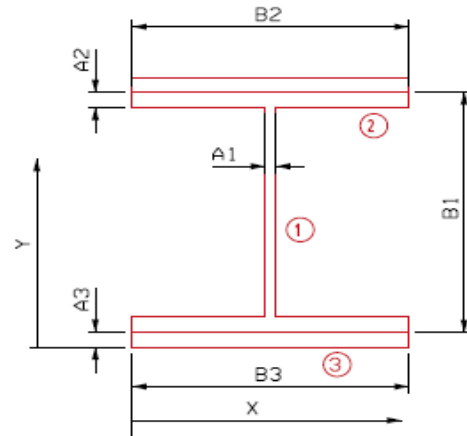
**Element Dimensions (without Section Losses):**

Rolled Beam

- $A_1 = t_w = 0.7000$  in
- $A_2 = t_f = 1.1280$  in
- $B_1 = d = 14.8800$  in
- $B_2 = b_f = 15.5200$  in

Cover Plate

- $A_3 = t = 1.0000$  in
- $B_3 = b = 16.5000$  in



Bent 14 South Column

X-Axis Section Properties:

Gross Section (without Losses)			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web Plate		8.8368	8.4400	74.5826	117.3567	0.0000	0.0000	117.3567
2	Left Flange		17.5066	1.5640	27.3803	1.8563	6.8760	827.6992	829.5555
	Right Flange		17.5066	15.3160	268.1305	1.8563	6.8760	827.6992	829.5555
3	Left Plate		16.5000	0.5000	8.2500	1.3750	7.9400	1040.2194	1041.5944
	Right Plate		16.5000	16.3800	270.2700	1.3750	7.9400	1040.2194	1041.5944
<b>Total</b>			<b>76.85</b>		<b>648.61</b>	<b>123.82</b>		<b>3735.84</b>	<b>3859.66</b>
Section Losses			A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	7.4100	0.0625	-0.4631	2.0968	-0.9711	-0.0002	6.3433	-18.6347	-18.6348
2	7.4100	0.0625	-0.4631	14.7833	-6.8465	-0.0002	6.3433	-18.6347	-18.6348
3	0.0625	12.6240	-0.7890	8.4400	-6.6592	-10.4783	0.0000	0.0000	-10.4783
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>-1.72</b>		<b>-14.48</b>	<b>-10.48</b>		<b>-37.27</b>	<b>-47.75</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	8.4400	in	$S_{top} = 457.31$	$in^3$	y-bar =	8.4400	in	$S_{top} = 451.65$	$in^3$		
$I_x =$	3859.66	$in^4$	$S_{bott.} = 457.31$	$in^3$	$I_x =$	3811.91	$in^4$	$S_{bott.} = 451.65$	$in^3$		
$C_{top} =$	8.4400	in	A =	76.8499	$in^2$	$C_{top} =$	8.4400	in	A =	75.1347	$in^2$
$C_{bottom} =$	8.4400	in	$r_x =$	7.0868	in	$C_{bottom} =$	8.4400	in	$r_x =$	7.1228	in



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Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Web Plate		8.8368	8.2500	72.9036	0.3608	0.0000	0.0000	0.3608
2	Flange Plates		35.0131	8.2500	288.8582	702.8020	0.0000	0.0000	702.8020
3	Cover Plate		33.0000	8.2500	272.2500	748.6875	0.0000	0.0000	748.6875
<b>Total</b>			<b>76.85</b>		<b>634.01</b>	<b>1451.85</b>		<b>0.00</b>	<b>1451.85</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0625	7.4100	-0.4631	11.6400	-5.3908	-2.1191	3.4351	-5.4650	-7.5841
2	0.0625	7.4100	-0.4631	11.6400	-5.3908	-2.1191	3.4351	-5.4650	-7.5841
3	12.6240	0.0625	-0.7890	8.5688	-6.7607	-0.0003	0.3639	-0.1045	-0.1047
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>-1.72</b>		<b>-17.54</b>	<b>-4.24</b>		<b>-11.03</b>	<b>-15.27</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	8.2500	in	S <sub>right</sub> = 175.98 in <sup>3</sup>	x-bar =	8.2049	in	S <sub>right</sub> = 173.18 in <sup>3</sup>
I <sub>y</sub> =	1451.85	in <sup>4</sup>	S <sub>left</sub> = 175.98 in <sup>3</sup>	I <sub>y</sub> =	1436.58	in <sup>4</sup>	S <sub>left</sub> = 175.09 in <sup>3</sup>
C <sub>right</sub> =	8.2500	in	A = 76.8499 in <sup>2</sup>	C <sub>right</sub> =	8.2951	in	A = 75.1347 in <sup>2</sup>
C <sub>left</sub> =	8.2500	in	r <sub>y</sub> = 4.3465 in	C <sub>left</sub> =	8.2049	in	r <sub>y</sub> = 4.3726 in



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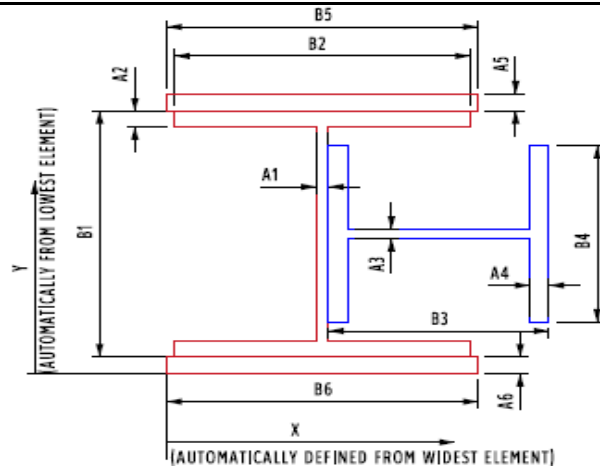
Date 3/12/2012  
 Date 3/22/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<u>Rolled Main Section*</u>	CB16x114	<u>Top Cover Plate</u>	
$A_1 = t_w =$	0.6310 in	$A_5 = t =$	0.8750 in
$B_1 = d =$	16.6400 in	$B_5 = b =$	16.5000 in
$A_2 = t_f =$	1.0350 in	<u>Bottom Cover Plate</u>	
$B_2 = b_f =$	11.6290 in	$A_6 = t =$	0.8750 in
<u>Rolled Side Section*</u>	WF14x61	$B_6 = b =$	16.5000 in
$A_3 = t_w =$	0.3780 in		
$B_3 = d =$	13.9100 in		
$A_4 = t_f =$	0.6430 in		
$B_4 = b_f =$	10.0000 in		



**Bent 15 North & South Column  
 Upper Part with 2 Cover Plates**

\*Select sections from dropdown list

Side beam is assumed centered on main beam's web



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Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate	9.1937	8.2500	75.8478	0.3050	1.6070	23.7414	24.0465
2	Main Flanges	24.0720	8.2500	198.5942	271.2790	1.6070	62.1629	333.4419
3	Side Web Plate	4.7719	15.5205	74.0618	63.3726	5.6635	153.0603	216.4329
4	Side Left Flange	6.4300	8.8870	57.1434	0.2215	0.9700	6.0497	6.2712
	Side Right Flange	6.4300	22.1540	142.4502	0.2215	12.2970	972.3242	972.5457
5	Top Cover Plate	14.4375	8.2500	119.1094	327.5508	1.6070	37.2829	364.8337
6	Bottom Cover Plate	14.4375	8.2500	119.1094	327.5508	1.6070	37.2829	364.8337
<b>Total</b>		<b>79.77</b>		<b>786.32</b>	<b>990.50</b>		<b>1291.90</b>	<b>2282.41</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	9.8570 in	S <sub>right</sub> =	180.88 in <sup>3</sup>	x-bar =	9.8570 in	S <sub>right</sub> =	180.88 in <sup>3</sup>
I <sub>y</sub> =	2282.41 in <sup>4</sup>	S <sub>left</sub> =	231.55 in <sup>3</sup>	I <sub>y</sub> =	2282.41 in <sup>4</sup>	S <sub>left</sub> =	231.55 in <sup>3</sup>
C <sub>right</sub> =	12.6185 in	A =	79.7726 in <sup>2</sup>	C <sub>right</sub> =	12.6185 in	A =	79.7726 in <sup>2</sup>
C <sub>left</sub> =	9.8570 in	r <sub>y</sub> =	5.3490 in	C <sub>left</sub> =	9.8570 in	r <sub>y</sub> =	5.3490 in



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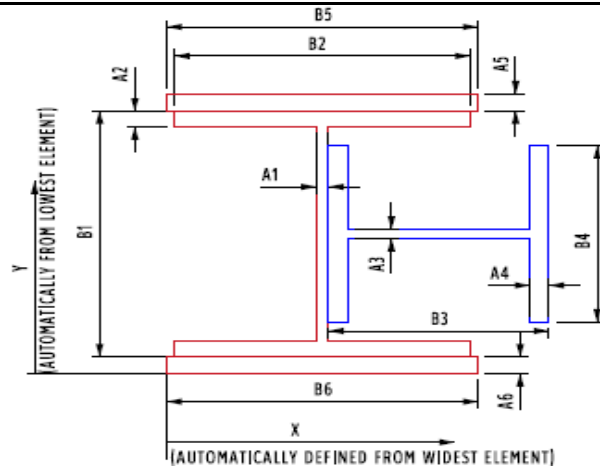
Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	CB16x114	<b>Top Cover Plate</b>
$A_1 = t_w = 0.6310$ in		$A_5 = t = 0.5000$ in
$B_1 = d = 16.6400$ in		$B_5 = b = 16.5000$ in
$A_2 = t_f = 1.0350$ in		<b>Bottom Cover Plate</b>
$B_2 = b_f = 11.6290$ in		$A_6 = t = 0.5000$ in
<b>Rolled Side Section*</b>	WF14x61	$B_6 = b = 16.5000$ in
$A_3 = t_w = 0.3780$ in		
$B_3 = d = 13.9100$ in		
$A_4 = t_f = 0.6430$ in		
$B_4 = b_f = 10.0000$ in		



\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web plate	9.1937	8.8200	81.0882	162.6398	0.0000	0.0000	162.6398
2	Main Top Flange	12.0360	16.6225	200.0687	1.0744	7.8025	732.7406	733.8151
	Main Bottom Flange	12.0360	1.0175	12.2466	1.0744	7.8025	732.7406	733.8151
3	Side Web Plate	4.7719	8.8200	42.0879	0.0568	0.0000	0.0000	0.0568
4	Side Flange Plates	12.8600	8.8200	113.4252	107.1667	0.0000	0.0000	107.1667
5	Top Cover Plate	8.2500	17.3900	143.4675	0.1719	8.5700	605.9204	606.0923
6	Bottom Cover Plate	8.2500	0.2500	2.0625	0.1719	8.5700	605.9204	606.0923
<b>Total</b>		<b>67.40</b>		<b>594.45</b>	<b>272.36</b>		<b>2677.32</b>	<b>2949.68</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	5.4990	0.1250	-0.6874	1.4725	-1.0122	-0.0009	7.3475	-37.1085
2	5.4990	0.1250	-0.6874	16.1675	-11.1131	-0.0009	7.3475	-37.1085
3	0.1250	14.5700	-1.8213	8.8200	-16.0634	-32.2187	0.0000	-32.2187
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>-3.20</b>		<b>-28.19</b>	<b>-32.22</b>		<b>-74.22</b>

**Bent 15 North Column**  
**Lower Part with 1 Cover Plate**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	8.8200	in	$S_{top} = 334.43$ in <sup>3</sup>	y-bar =	8.8200	in	$S_{top} = 322.36$ in <sup>3</sup>
$I_x =$	2949.68	in <sup>4</sup>	$S_{bott.} = 334.43$ in <sup>3</sup>	$I_x =$	2843.24	in <sup>4</sup>	$S_{bott.} = 322.36$ in <sup>3</sup>
$C_{top} =$	8.8200	in	$A = 67.3976$ in <sup>2</sup>	$C_{top} =$	8.8200	in	$A = 64.2016$ in <sup>2</sup>
$C_{bottom} =$	8.8200	in	$r_x = 6.6155$ in	$C_{bottom} =$	8.8200	in	$r_x = 6.6548$ in
			$J = 13.19$ in <sup>4</sup>				



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Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

Y-Axis Section Properties:

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate	9.1937	8.2500	75.8478	0.3050	1.9020	33.2603	33.5653
2	Main Flanges	24.0720	8.2500	198.5942	271.2790	1.9020	87.0863	358.3653
3	Side Web Plate	4.7719	15.5205	74.0618	63.3726	5.3685	137.5274	200.8999
4	Side Left Flange	6.4300	8.8870	57.1434	0.2215	1.2650	10.2900	10.5116
	Side Right Flange	6.4300	22.1540	142.4502	0.2215	12.0020	926.2233	926.4448
5	Top Cover Plate	8.2500	8.2500	68.0625	187.1719	1.9020	29.8463	217.0182
6	Bottom Cover Plate	8.2500	8.2500	68.0625	187.1719	1.9020	29.8463	217.0182
<b>Total</b>		<b>67.40</b>		<b>684.22</b>	<b>709.74</b>		<b>1254.08</b>	<b>1963.82</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.1250	5.4990	-0.6874	4.1250	-2.8354	-1.7321	6.2172	-26.5697
2	0.1250	5.4990	-0.6874	4.1250	-2.8354	-1.7321	6.2172	-26.5697
3	14.5700	0.1250	-1.8213	7.9970	-14.5645	-0.0024	2.3452	-10.0170
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>-3.20</b>		<b>-20.24</b>	<b>-3.47</b>		<b>-63.16</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	10.1520	in	S <sub>right</sub> =	159.36	in <sup>3</sup>	x-bar =	10.3422	in	S <sub>right</sub> =	156.36	in <sup>3</sup>
I <sub>y</sub> =	1963.82	in <sup>4</sup>	S <sub>left</sub> =	193.44	in <sup>3</sup>	I <sub>y</sub> =	1897.20	in <sup>4</sup>	S <sub>left</sub> =	183.44	in <sup>3</sup>
C <sub>right</sub> =	12.3235	in	A =	67.3976	in <sup>2</sup>	C <sub>right</sub> =	12.1333	in	A =	64.2016	in <sup>2</sup>
C <sub>left</sub> =	10.1520	in	r <sub>y</sub> =	5.3980	in	C <sub>left</sub> =	10.3422	in	r <sub>y</sub> =	5.4361	in





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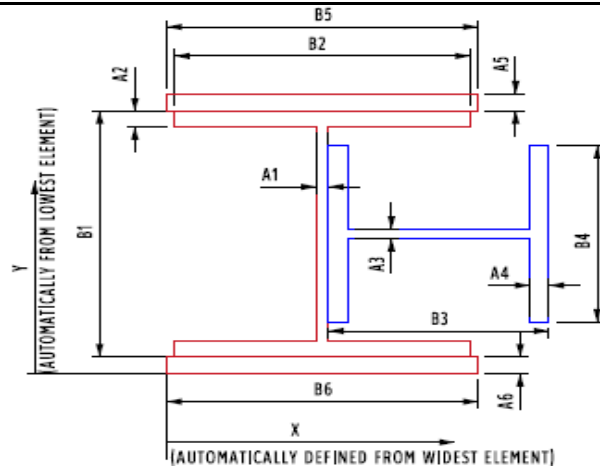
Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	CB16x114	<b>Top Cover Plate</b>
$A_1 = t_w = 0.6310$ in		$A_5 = t = 0.5000$ in
$B_1 = d = 16.6400$ in		$B_5 = b = 16.5000$ in
$A_2 = t_f = 1.0350$ in		<b>Bottom Cover Plate</b>
$B_2 = b_f = 11.6290$ in		$A_6 = t = 0.5000$ in
<b>Rolled Side Section*</b>	WF14x61	$B_6 = b = 16.5000$ in
$A_3 = t_w = 0.3780$ in		
$B_3 = d = 13.9100$ in		
$A_4 = t_f = 0.6430$ in		
$B_4 = b_f = 10.0000$ in		



\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web plate	9.1937	8.8200	81.0882	162.6398	0.0000	0.0000	162.6398
2	Main Top Flange	12.0360	16.6225	200.0687	1.0744	7.8025	732.7406	733.8151
	Main Bottom Flange	12.0360	1.0175	12.2466	1.0744	7.8025	732.7406	733.8151
3	Side Web Plate	4.7719	8.8200	42.0879	0.0568	0.0000	0.0000	0.0568
4	Side Flange Plates	12.8600	8.8200	113.4252	107.1667	0.0000	0.0000	107.1667
5	Top Cover Plate	8.2500	17.3900	143.4675	0.1719	8.5700	605.9204	606.0923
6	Bottom Cover Plate	8.2500	0.2500	2.0625	0.1719	8.5700	605.9204	606.0923
<b>Total</b>		<b>67.40</b>		<b>594.45</b>	<b>272.36</b>		<b>2677.32</b>	<b>2949.68</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	8.8200	in	$S_{top} = 334.43$ in <sup>3</sup>	y-bar =	8.8200	in	$S_{top} = 334.43$ in <sup>3</sup>
$I_x =$	2949.68	in <sup>4</sup>	$S_{bott.} = 334.43$ in <sup>3</sup>	$I_x =$	2949.68	in <sup>4</sup>	$S_{bott.} = 334.43$ in <sup>3</sup>
$C_{top} =$	8.8200	in	$A = 67.3976$ in <sup>2</sup>	$C_{top} =$	8.8200	in	$A = 67.3976$ in <sup>2</sup>
$C_{bottom} =$	8.8200	in	$r_x = 6.6155$ in	$C_{bottom} =$	8.8200	in	$r_x = 6.6155$ in
			$J = 13.19$ in <sup>4</sup>				



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Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate	9.1937	8.2500	75.8478	0.3050	1.9020	33.2603	33.5653
2	Main Flanges	24.0720	8.2500	198.5942	271.2790	1.9020	87.0863	358.3653
3	Side Web Plate	4.7719	15.5205	74.0618	63.3726	5.3685	137.5274	200.8999
4	Side Left Flange	6.4300	8.8870	57.1434	0.2215	1.2650	10.2900	10.5116
	Side Right Flange	6.4300	22.1540	142.4502	0.2215	12.0020	926.2233	926.4448
5	Top Cover Plate	8.2500	8.2500	68.0625	187.1719	1.9020	29.8463	217.0182
6	Bottom Cover Plate	8.2500	8.2500	68.0625	187.1719	1.9020	29.8463	217.0182
<b>Total</b>		<b>67.40</b>		<b>684.22</b>	<b>709.74</b>		<b>1254.08</b>	<b>1963.82</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	10.1520 in	S <sub>right</sub> =	159.36 in <sup>3</sup>	x-bar =	10.1520 in	S <sub>right</sub> =	159.36 in <sup>3</sup>
I <sub>y</sub> =	1963.82 in <sup>4</sup>	S <sub>left</sub> =	193.44 in <sup>3</sup>	I <sub>y</sub> =	1963.82 in <sup>4</sup>	S <sub>left</sub> =	193.44 in <sup>3</sup>
C <sub>right</sub> =	12.3235 in	A =	67.3976 in <sup>2</sup>	C <sub>right</sub> =	12.3235 in	A =	67.3976 in <sup>2</sup>
C <sub>left</sub> =	10.1520 in	r <sub>y</sub> =	5.3980 in	C <sub>left</sub> =	10.1520 in	r <sub>y</sub> =	5.3980 in



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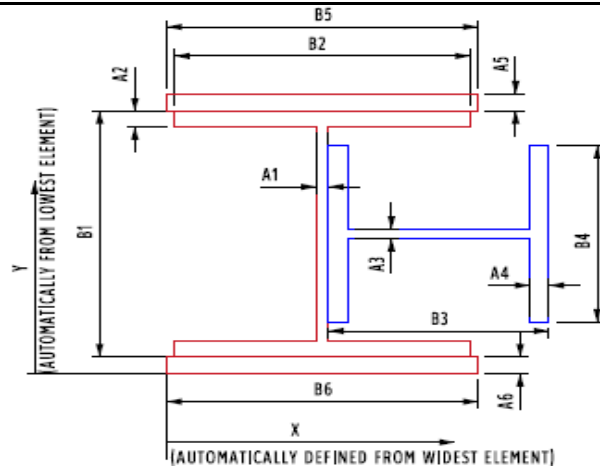
Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	CB16x114	<b>Top Cover Plate</b>
$A_1 = t_w = 0.6310$ in		$A_5 = t = 0.8750$ in
$B_1 = d = 16.6400$ in		$B_5 = b = 16.5000$ in
$A_2 = t_f = 1.0350$ in		<b>Bottom Cover Plate</b>
$B_2 = b_f = 11.6290$ in		$A_6 = t = 0.8750$ in
<b>Rolled Side Section*</b>	WF14x61	$B_6 = b = 16.5000$ in
$A_3 = t_w = 0.3780$ in		
$B_3 = d = 13.9100$ in		
$A_4 = t_f = 0.6430$ in		
$B_4 = b_f = 10.0000$ in		



\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web plate	9.1937	9.1950	84.5358	162.6398	0.0000	0.0000	162.6398
2	Main Top Flange	12.0360	16.9975	204.5822	1.0744	7.8025	732.7406	733.8151
	Main Bottom Flange	12.0360	1.3925	16.7602	1.0744	7.8025	732.7406	733.8151
3	Side Web Plate	4.7719	9.1950	43.8774	0.0568	0.0000	0.0000	0.0568
4	Side Flange Plates	12.8600	9.1950	118.2477	107.1667	0.0000	0.0000	107.1667
5	Top Cover Plate	14.4375	17.9525	259.1892	0.9211	8.7575	1107.2668	1108.1880
6	Bottom Cover Plate	14.4375	0.4375	6.3164	0.9211	8.7575	1107.2668	1108.1880
<b>Total</b>		<b>79.77</b>		<b>733.51</b>	<b>273.85</b>		<b>3680.01</b>	<b>3953.87</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	9.1950	in	S <sub>top</sub> = 430.00 in <sup>3</sup>	y-bar =	9.1950	in	S <sub>top</sub> = 430.00 in <sup>3</sup>
I <sub>x</sub> =	3953.87	in <sup>4</sup>	S <sub>bottom</sub> = 430.00 in <sup>3</sup>	I <sub>x</sub> =	3953.87	in <sup>4</sup>	S <sub>bottom</sub> = 430.00 in <sup>3</sup>
C <sub>top</sub> =	9.1950	in	A = 79.7726 in <sup>2</sup>	C <sub>top</sub> =	9.1950	in	A = 79.7726 in <sup>2</sup>
C <sub>bottom</sub> =	9.1950	in	r <sub>x</sub> = 7.0402 in	C <sub>bottom</sub> =	9.1950	in	r <sub>x</sub> = 7.0402 in
			J = 19.18 in <sup>4</sup>				



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

Y-Axis Section Properties:

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate	9.1937	8.2500	75.8478	0.3050	1.6070	23.7414	24.0465
2	Main Flanges	24.0720	8.2500	198.5942	271.2790	1.6070	62.1629	333.4419
3	Side Web Plate	4.7719	15.5205	74.0618	63.3726	5.6635	153.0603	216.4329
4	Side Left Flange	6.4300	8.8870	57.1434	0.2215	0.9700	6.0497	6.2712
	Side Right Flange	6.4300	22.1540	142.4502	0.2215	12.2970	972.3242	972.5457
5	Top Cover Plate	14.4375	8.2500	119.1094	327.5508	1.6070	37.2829	364.8337
6	Bottom Cover Plate	14.4375	8.2500	119.1094	327.5508	1.6070	37.2829	364.8337
<b>Total</b>		<b>79.77</b>		<b>786.32</b>	<b>990.50</b>		<b>1291.90</b>	<b>2282.41</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	9.8570	in	S <sub>right</sub> =	180.88	in <sup>3</sup>	x-bar =	9.8570	in	S <sub>right</sub> =	180.88	in <sup>3</sup>
I <sub>y</sub> =	2282.41	in <sup>4</sup>	S <sub>left</sub> =	231.55	in <sup>3</sup>	I <sub>y</sub> =	2282.41	in <sup>4</sup>	S <sub>left</sub> =	231.55	in <sup>3</sup>
C <sub>right</sub> =	12.6185	in	A =	79.7726	in <sup>2</sup>	C <sub>right</sub> =	12.6185	in	A =	79.7726	in <sup>2</sup>
C <sub>left</sub> =	9.8570	in	r <sub>y</sub> =	5.3490	in	C <sub>left</sub> =	9.8570	in	r <sub>y</sub> =	5.3490	in



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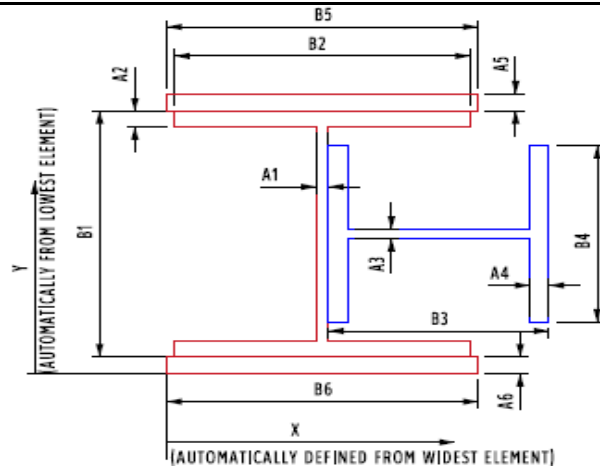
Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	CB16x114	<b>Top Cover Plate</b>
$A_1 = t_w = 0.6310$ in		$A_5 = t = 0.5000$ in
$B_1 = d = 16.6400$ in		$B_5 = b = 16.5000$ in
$A_2 = t_f = 1.0350$ in		<b>Bottom Cover Plate</b>
$B_2 = b_f = 11.6290$ in		$A_6 = t = 0.5000$ in
<b>Rolled Side Section*</b>	WF14x61	$B_6 = b = 16.5000$ in
$A_3 = t_w = 0.3780$ in		
$B_3 = d = 13.9100$ in		
$A_4 = t_f = 0.6430$ in		
$B_4 = b_f = 10.0000$ in		



\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web plate	9.1937	8.8200	81.0882	162.6398	0.0000	0.0000	162.6398
2	Main Top Flange	12.0360	16.6225	200.0687	1.0744	7.8025	732.7406	733.8151
	Main Bottom Flange	12.0360	1.0175	12.2466	1.0744	7.8025	732.7406	733.8151
3	Side Web Plate	4.7719	8.8200	42.0879	0.0568	0.0000	0.0000	0.0568
4	Side Flange Plates	12.8600	8.8200	113.4252	107.1667	0.0000	0.0000	107.1667
5	Top Cover Plate	8.2500	17.3900	143.4675	0.1719	8.5700	605.9204	606.0923
6	Bottom Cover Plate	8.2500	0.2500	2.0625	0.1719	8.5700	605.9204	606.0923
<b>Total</b>		<b>67.40</b>		<b>594.45</b>	<b>272.36</b>		<b>2677.32</b>	<b>2949.68</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

**Bent 16 North & South Column  
Lower Part with 1 Cover Plate**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	8.8200	in	S <sub>top</sub> = 334.43 in <sup>3</sup>	y-bar =	8.8200	in	S <sub>top</sub> = 334.43 in <sup>3</sup>
I <sub>x</sub> =	2949.68	in <sup>4</sup>	S <sub>bottom</sub> = 334.43 in <sup>3</sup>	I <sub>x</sub> =	2949.68	in <sup>4</sup>	S <sub>bottom</sub> = 334.43 in <sup>3</sup>
C <sub>top</sub> =	8.8200	in	A = 67.3976 in <sup>2</sup>	C <sub>top</sub> =	8.8200	in	A = 67.3976 in <sup>2</sup>
C <sub>bottom</sub> =	8.8200	in	r <sub>x</sub> = 6.6155 in	C <sub>bottom</sub> =	8.8200	in	r <sub>x</sub> = 6.6155 in
			J = 13.19 in <sup>4</sup>				



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

Y-Axis Section Properties:

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate	9.1937	8.2500	75.8478	0.3050	1.9020	33.2603	33.5653
2	Main Flanges	24.0720	8.2500	198.5942	271.2790	1.9020	87.0863	358.3653
3	Side Web Plate	4.7719	15.5205	74.0618	63.3726	5.3685	137.5274	200.8999
4	Side Left Flange	6.4300	8.8870	57.1434	0.2215	1.2650	10.2900	10.5116
	Side Right Flange	6.4300	22.1540	142.4502	0.2215	12.0020	926.2233	926.4448
5	Top Cover Plate	8.2500	8.2500	68.0625	187.1719	1.9020	29.8463	217.0182
6	Bottom Cover Plate	8.2500	8.2500	68.0625	187.1719	1.9020	29.8463	217.0182
<b>Total</b>		<b>67.40</b>		<b>684.22</b>	<b>709.74</b>		<b>1254.08</b>	<b>1963.82</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	10.1520	in	S <sub>right</sub> =	159.36	in <sup>3</sup>	x-bar =	10.1520	in	S <sub>right</sub> =	159.36	in <sup>3</sup>
I <sub>y</sub> =	1963.82	in <sup>4</sup>	S <sub>left</sub> =	193.44	in <sup>3</sup>	I <sub>y</sub> =	1963.82	in <sup>4</sup>	S <sub>left</sub> =	193.44	in <sup>3</sup>
C <sub>right</sub> =	12.3235	in	A =	67.3976	in <sup>2</sup>	C <sub>right</sub> =	12.3235	in	A =	67.3976	in <sup>2</sup>
C <sub>left</sub> =	10.1520	in	r <sub>y</sub> =	5.3980	in	C <sub>left</sub> =	10.1520	in	r <sub>y</sub> =	5.3980	in



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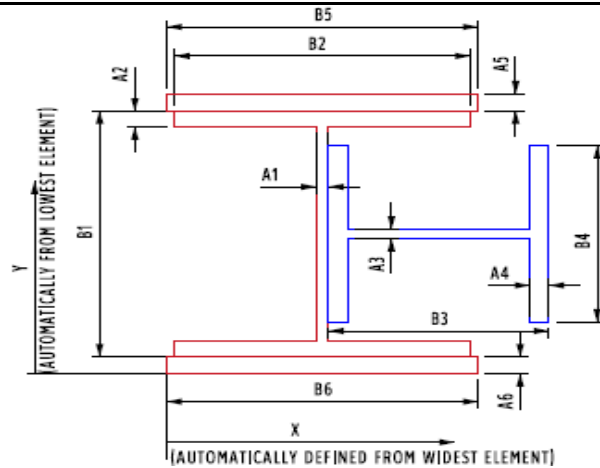
Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	CB16x114	<b>Top Cover Plate</b>	
$A_1 = t_w =$	0.6310 in	$A_5 = t =$	0.5000 in
$B_1 = d =$	16.6400 in	$B_5 = b =$	16.5000 in
$A_2 = t_f =$	1.0350 in	<b>Bottom Cover Plate</b>	
$B_2 = b_f =$	11.6290 in	$A_6 = t =$	0.5000 in
<b>Rolled Side Section*</b>	WF14x61	$B_6 = b =$	16.5000 in
$A_3 = t_w =$	0.3780 in		
$B_3 = d =$	13.9100 in		
$A_4 = t_f =$	0.6430 in		
$B_4 = b_f =$	10.0000 in		



\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web plate	9.1937	8.8200	81.0882	162.6398	0.0000	0.0000	162.6398
2	Main Top Flange	12.0360	16.6225	200.0687	1.0744	7.8025	732.7406	733.8151
	Main Bottom Flange	12.0360	1.0175	12.2466	1.0744	7.8025	732.7406	733.8151
3	Side Web Plate	4.7719	8.8200	42.0879	0.0568	0.0000	0.0000	0.0568
4	Side Flange Plates	12.8600	8.8200	113.4252	107.1667	0.0000	0.0000	107.1667
5	Top Cover Plate	8.2500	17.3900	143.4675	0.1719	8.5700	605.9204	606.0923
6	Bottom Cover Plate	8.2500	0.2500	2.0625	0.1719	8.5700	605.9204	606.0923
<b>Total</b>		<b>67.40</b>		<b>594.45</b>	<b>272.36</b>		<b>2677.32</b>	<b>2949.68</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	16.5000	0.0625	-1.0313	0.0313	-0.0322	-0.0003	8.5191	-74.8422
2	11.6290	0.0625	-0.7268	1.5038	-1.0929	-0.0002	7.0466	-36.0891
3	0.0625	14.5700	-0.9106	8.8200	-8.0317	-16.1093	0.2697	-0.0662
4	16.5000	0.0625	-1.0313	32.1363	-33.1405	-0.0003	23.5859	-573.6811
5	11.6290	0.0625	-0.7268	17.6088	-12.7983	-0.0002	9.0584	-59.6389
6	0.0625	10.0000	-0.6250	8.8200	-5.5125	-5.2083	0.2697	-0.0455
7	12.6240	0.0625	-0.7890	8.9778	-7.0834	-0.0003	0.4274	-0.1442
8	12.6240	0.0625	-0.7890	8.6623	-6.8345	-0.0003	0.1119	-0.0099
9	0.0625	10.0000	-0.6250	8.8200	-5.5125	-5.2083	0.2697	-0.0455
10	0.0625	10.0000	-0.6250	8.8200	-5.5125	-5.2083	0.2697	-0.0455
11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>-7.88</b>		<b>-85.55</b>	<b>-31.74</b>		<b>-744.61</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	8.8200 in	$S_{top} =$	334.43 in <sup>3</sup>	y-bar =	8.5503 in	$S_{top} =$	239.10 in <sup>3</sup>
$I_x =$	2949.68 in <sup>4</sup>	$S_{bott.} =$	334.43 in <sup>3</sup>	$I_x =$	2173.33 in <sup>4</sup>	$S_{bott.} =$	254.18 in <sup>3</sup>
$C_{top} =$	8.8200 in	A =	67.3976 in <sup>2</sup>	$C_{top} =$	9.0897 in	A =	59.5178 in <sup>2</sup>
$C_{bottom} =$	8.8200 in	$r_x =$	6.6155 in	$C_{bottom} =$	8.5503 in	$r_x =$	6.0428 in
		J =	13.19 in <sup>4</sup>				



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate		9.1937	8.2500	75.8478	0.3050	1.9020	33.2603	33.5653
2	Main Flanges		24.0720	8.2500	198.5942	271.2790	1.9020	87.0863	358.3653
3	Side Web Plate		4.7719	15.5205	74.0618	63.3726	5.3685	137.5274	200.8999
4	Side Left Flange		6.4300	8.8870	57.1434	0.2215	1.2650	10.2900	10.5116
	Side Right Flange		6.4300	22.1540	142.4502	0.2215	12.0020	926.2233	926.4448
5	Top Cover Plate		8.2500	8.2500	68.0625	187.1719	1.9020	29.8463	217.0182
6	Bottom Cover Plate		8.2500	8.2500	68.0625	187.1719	1.9020	29.8463	217.0182
<b>Total</b>			<b>67.40</b>		<b>684.22</b>	<b>709.74</b>		<b>1254.08</b>	<b>1963.82</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0625	16.5000	-1.0313	8.2500	-8.5078	-23.3965	1.5375	-2.4377	-25.8341
2	0.0625	11.6290	-0.7268	8.2500	-5.9962	-8.1908	1.5375	-1.7180	-9.9088
3	14.5700	0.0625	-0.9106	16.2158	-14.7665	-0.0003	6.4283	-37.6297	-37.6300
4	0.0625	16.5000	-1.0313	8.2500	-8.5078	-23.3965	1.5375	-2.4377	-25.8341
5	0.0625	11.6290	-0.7268	8.2500	-5.9962	-8.1908	1.5375	-1.7180	-9.9088
6	10.0000	0.0625	-0.6250	9.1773	-5.7358	-0.0002	0.6102	-0.2327	-0.2329
7	0.0625	12.6240	-0.7890	15.5205	-12.2457	-10.4783	5.7330	-25.9326	-36.4109
8	0.0625	12.6240	-0.7890	15.5205	-12.2457	-10.4783	5.7330	-25.9326	-36.4109
9	10.0000	0.0625	-0.6250	21.8638	-13.6648	-0.0002	12.0763	-91.1480	-91.1482
10	10.0000	0.0625	-0.6250	22.4443	-14.0277	-0.0002	12.6568	-100.1214	-100.1216
11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>-7.88</b>		<b>-101.69</b>	<b>-84.13</b>		<b>-289.31</b>	<b>-373.44</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	10.1520	in	S <sub>right</sub> = 159.36 in <sup>3</sup>	x-bar =	9.7875	in	S <sub>right</sub> = 125.35 in <sup>3</sup>
I <sub>y</sub> =	1963.82	in <sup>4</sup>	S <sub>left</sub> = 193.44 in <sup>3</sup>	I <sub>y</sub> =	1590.38	in <sup>4</sup>	S <sub>left</sub> = 162.49 in <sup>3</sup>
C <sub>right</sub> =	12.3235	in	A = 67.3976 in <sup>2</sup>	C <sub>right</sub> =	12.6880	in	A = 59.5178 in <sup>2</sup>
C <sub>left</sub> =	10.1520	in	r <sub>y</sub> = 5.3980 in	C <sub>left</sub> =	9.7875	in	r <sub>y</sub> = 5.1692 in





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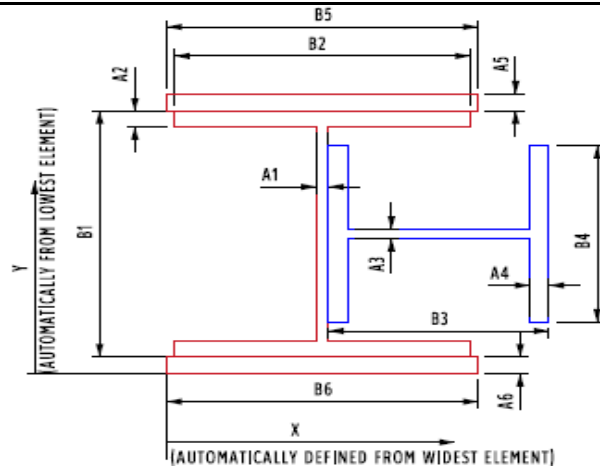
Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	CB16x114	<b>Top Cover Plate</b>
$A_1 = t_w = 0.6310$ in		$A_5 = t = 1.0000$ in
$B_1 = d = 16.6400$ in		$B_5 = b = 16.5000$ in
$A_2 = t_f = 1.0350$ in		<b>Bottom Cover Plate</b>
$B_2 = b_f = 11.6290$ in		$A_6 = t = 1.0000$ in
<b>Rolled Side Section*</b>	WF14x61	$B_6 = b = 16.5000$ in
$A_3 = t_w = 0.3780$ in		
$B_3 = d = 13.9100$ in		
$A_4 = t_f = 0.6430$ in		
$B_4 = b_f = 10.0000$ in		



\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web plate	9.1937	9.3200	85.6850	162.6398	0.0000	0.0000	162.6398
2	Main Top Flange	12.0360	17.1225	206.0867	1.0744	7.8025	732.7406	733.8151
	Main Bottom Flange	12.0360	1.5175	18.2647	1.0744	7.8025	732.7406	733.8151
3	Side Web Plate	4.7719	9.3200	44.4738	0.0568	0.0000	0.0000	0.0568
4	Side Flange Plates	12.8600	9.3200	119.8552	107.1667	0.0000	0.0000	107.1667
5	Top Cover Plate	16.5000	18.1400	299.3100	1.3750	8.8200	1283.5746	1284.9496
6	Bottom Cover Plate	16.5000	0.5000	8.2500	1.3750	8.8200	1283.5746	1284.9496
<b>Total</b>		<b>83.90</b>		<b>781.93</b>	<b>274.76</b>		<b>4032.63</b>	<b>4307.39</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

**Bent 17 South Column**  
**Upper Part with 2 Cover Plates**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	9.3200 in	$S_{top} =$	462.17 in <sup>3</sup>	y-bar =	9.3200 in	$S_{top} =$	462.17 in <sup>3</sup>
$I_x =$	4307.39 in <sup>4</sup>	$S_{bott.} =$	462.17 in <sup>3</sup>	$I_x =$	4307.39 in <sup>4</sup>	$S_{bott.} =$	462.17 in <sup>3</sup>
$C_{top} =$	9.3200 in	A =	83.8976 in <sup>2</sup>	$C_{top} =$	9.3200 in	A =	83.8976 in <sup>2</sup>
$C_{bottom} =$	9.3200 in	$r_x =$	7.1653 in	$C_{bottom} =$	9.3200 in	$r_x =$	7.1653 in
		J =	22.82 in <sup>4</sup>				



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Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate	9.1937	8.2500	75.8478	0.3050	1.5280	21.4642	21.7693
2	Main Flanges	24.0720	8.2500	198.5942	271.2790	1.5280	56.2004	327.4794
3	Side Web Plate	4.7719	15.5205	74.0618	63.3726	5.7425	157.3606	220.7332
4	Side Left Flange	6.4300	8.8870	57.1434	0.2215	0.8910	5.1042	5.3258
	Side Right Flange	6.4300	22.1540	142.4502	0.2215	12.3760	984.8590	985.0805
5	Top Cover Plate	16.5000	8.2500	136.1250	374.3438	1.5280	38.5222	412.8659
6	Bottom Cover Plate	16.5000	8.2500	136.1250	374.3438	1.5280	38.5222	412.8659
<b>Total</b>		<b>83.90</b>		<b>820.35</b>	<b>1084.09</b>		<b>1302.03</b>	<b>2386.12</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	9.7780	in	S <sub>right</sub> =	187.92	in <sup>3</sup>	x-bar =	9.7780	in	S <sub>right</sub> =	187.92	in <sup>3</sup>
I <sub>y</sub> =	2386.12	in <sup>4</sup>	S <sub>left</sub> =	244.03	in <sup>3</sup>	I <sub>y</sub> =	2386.12	in <sup>4</sup>	S <sub>left</sub> =	244.03	in <sup>3</sup>
C <sub>right</sub> =	12.6975	in	A =	83.8976	in <sup>2</sup>	C <sub>right</sub> =	12.6975	in	A =	83.8976	in <sup>2</sup>
C <sub>left</sub> =	9.7780	in	r <sub>y</sub> =	5.3330	in	C <sub>left</sub> =	9.7780	in	r <sub>y</sub> =	5.3330	in



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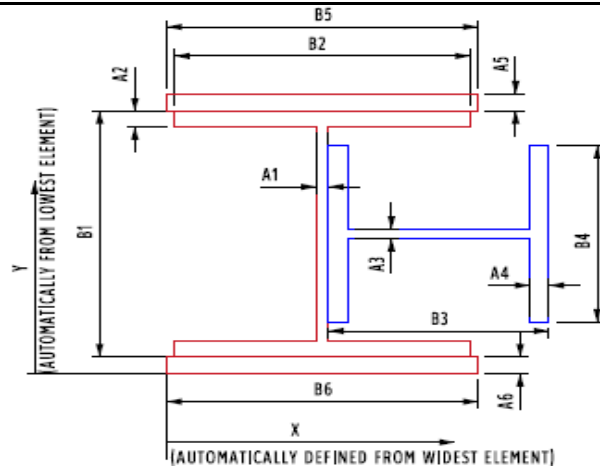
Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	CB16x114	<b>Top Cover Plate</b>
$A_1 = t_w = 0.6310$ in		$A_5 = t = 0.5000$ in
$B_1 = d = 16.6400$ in		$B_5 = b = 16.5000$ in
$A_2 = t_f = 1.0350$ in		<b>Bottom Cover Plate</b>
$B_2 = b_f = 11.6290$ in		$A_6 = t = 0.5000$ in
<b>Rolled Side Section*</b>	WF14x61	$B_6 = b = 16.5000$ in
$A_3 = t_w = 0.3780$ in		
$B_3 = d = 13.9100$ in		
$A_4 = t_f = 0.6430$ in		
$B_4 = b_f = 10.0000$ in		



\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web plate	9.1937	8.8200	81.0882	162.6398	0.0000	0.0000	162.6398
2	Main Top Flange	12.0360	16.6225	200.0687	1.0744	7.8025	732.7406	733.8151
	Main Bottom Flange	12.0360	1.0175	12.2466	1.0744	7.8025	732.7406	733.8151
3	Side Web Plate	4.7719	8.8200	42.0879	0.0568	0.0000	0.0000	0.0568
4	Side Flange Plates	12.8600	8.8200	113.4252	107.1667	0.0000	0.0000	107.1667
5	Top Cover Plate	8.2500	17.3900	143.4675	0.1719	8.5700	605.9204	606.0923
6	Bottom Cover Plate	8.2500	0.2500	2.0625	0.1719	8.5700	605.9204	606.0923
<b>Total</b>		<b>67.40</b>		<b>594.45</b>	<b>272.36</b>		<b>2677.32</b>	<b>2949.68</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

**Bent 17 North & South Column**  
**Lower Part with 1 Cover Plate**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	8.8200 in	$S_{top} =$	334.43 in <sup>3</sup>	y-bar =	8.8200 in	$S_{top} =$	334.43 in <sup>3</sup>
$I_x =$	2949.68 in <sup>4</sup>	$S_{bott.} =$	334.43 in <sup>3</sup>	$I_x =$	2949.68 in <sup>4</sup>	$S_{bott.} =$	334.43 in <sup>3</sup>
$C_{top} =$	8.8200 in	A =	67.3976 in <sup>2</sup>	$C_{top} =$	8.8200 in	A =	67.3976 in <sup>2</sup>
$C_{bottom} =$	8.8200 in	$r_x =$	6.6155 in	$C_{bottom} =$	8.8200 in	$r_x =$	6.6155 in
		J =	13.19 in <sup>4</sup>				



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Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate	9.1937	8.2500	75.8478	0.3050	1.9020	33.2603	33.5653
2	Main Flanges	24.0720	8.2500	198.5942	271.2790	1.9020	87.0863	358.3653
3	Side Web Plate	4.7719	15.5205	74.0618	63.3726	5.3685	137.5274	200.8999
4	Side Left Flange	6.4300	8.8870	57.1434	0.2215	1.2650	10.2900	10.5116
	Side Right Flange	6.4300	22.1540	142.4502	0.2215	12.0020	926.2233	926.4448
5	Top Cover Plate	8.2500	8.2500	68.0625	187.1719	1.9020	29.8463	217.0182
6	Bottom Cover Plate	8.2500	8.2500	68.0625	187.1719	1.9020	29.8463	217.0182
<b>Total</b>		<b>67.40</b>		<b>684.22</b>	<b>709.74</b>		<b>1254.08</b>	<b>1963.82</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	10.1520	in	S <sub>right</sub> =	159.36	in <sup>3</sup>	x-bar =	10.1520	in	S <sub>right</sub> =	159.36	in <sup>3</sup>
I <sub>y</sub> =	1963.82	in <sup>4</sup>	S <sub>left</sub> =	193.44	in <sup>3</sup>	I <sub>y</sub> =	1963.82	in <sup>4</sup>	S <sub>left</sub> =	193.44	in <sup>3</sup>
C <sub>right</sub> =	12.3235	in	A =	67.3976	in <sup>2</sup>	C <sub>right</sub> =	12.3235	in	A =	67.3976	in <sup>2</sup>
C <sub>left</sub> =	10.1520	in	r <sub>y</sub> =	5.3980	in	C <sub>left</sub> =	10.1520	in	r <sub>y</sub> =	5.3980	in



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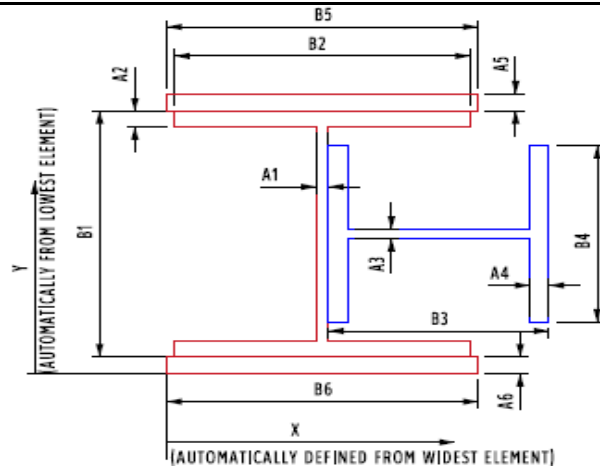
Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	CB16x88	<b>Top Cover Plate</b>
$A_1 = t_w = 0.5040$ in		$A_5 = t = 1.0000$ in
$B_1 = d = 16.1600$ in		$B_5 = b = 16.0000$ in
$A_2 = t_f = 0.7950$ in		<b>Bottom Cover Plate</b>
$B_2 = b_f = 11.5020$ in		$A_6 = t = 1.0000$ in
<b>Rolled Side Section*</b>	WF14x48	$B_6 = b = 16.0000$ in
$A_3 = t_w = 0.3390$ in		
$B_3 = d = 13.8100$ in		
$A_4 = t_f = 0.5930$ in		
$B_4 = b_f = 8.0310$ in		



\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web plate	7.3433	9.0800	66.6770	129.9056	0.0000	0.0000	129.9056
2	Main Top Flange	9.1441	16.7625	153.2778	0.4816	7.6825	539.6916	540.1732
	Main Bottom Flange	9.1441	1.3975	12.7789	0.4816	7.6825	539.6916	540.1732
3	Side Web Plate	4.2795	9.0800	38.8582	0.0410	0.0000	0.0000	0.0410
4	Side Flange Plates	9.5248	9.0800	86.4849	51.1932	0.0000	0.0000	51.1932
5	Top Cover Plate	16.0000	17.6600	282.5600	1.3333	8.5800	1177.8624	1179.1957
6	Bottom Cover Plate	16.0000	0.5000	8.0000	1.3333	8.5800	1177.8624	1179.1957
<b>Total</b>		<b>71.44</b>		<b>648.64</b>	<b>184.77</b>		<b>3435.11</b>	<b>3619.88</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	9.0800	in	$S_{top} = 398.66$ in <sup>3</sup>	y-bar =	9.0800	in	$S_{top} = 398.66$ in <sup>3</sup>
$I_x =$	3619.88	in <sup>4</sup>	$S_{bott.} = 398.66$ in <sup>3</sup>	$I_x =$	3619.88	in <sup>4</sup>	$S_{bott.} = 398.66$ in <sup>3</sup>
$C_{top} =$	9.0800	in	$A = 71.4358$ in <sup>2</sup>	$C_{top} =$	9.0800	in	$A = 71.4358$ in <sup>2</sup>
$C_{bottom} =$	9.0800	in	$r_x = 7.1185$ in	$C_{bottom} =$	9.0800	in	$r_x = 7.1185$ in
			$J = 16.42$ in <sup>4</sup>				



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Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate	7.3433	8.0000	58.7462	0.1554	1.3830	14.0459	14.2013
2	Main Flanges	18.2882	8.0000	146.3054	201.6211	1.3830	34.9808	236.6019
3	Side Web Plate	4.2795	15.1570	64.8649	56.8342	5.7740	142.6746	199.5087
4	Side Left Flange	4.7624	8.5485	40.7112	0.1396	0.8345	3.3167	3.4562
	Side Right Flange	4.7624	21.7655	103.6556	0.1396	12.3825	730.1957	730.3353
5	Top Cover Plate	16.0000	8.0000	128.0000	341.3333	1.3830	30.6041	371.9374
6	Bottom Cover Plate	16.0000	8.0000	128.0000	341.3333	1.3830	30.6041	371.9374
<b>Total</b>		<b>71.44</b>		<b>670.28</b>	<b>941.56</b>		<b>986.42</b>	<b>1927.98</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	9.3830	in	S <sub>right</sub> =	152.06	in <sup>3</sup>	x-bar =	9.3830	in	S <sub>right</sub> =	152.06	in <sup>3</sup>
I <sub>y</sub> =	1927.98	in <sup>4</sup>	S <sub>left</sub> =	205.48	in <sup>3</sup>	I <sub>y</sub> =	1927.98	in <sup>4</sup>	S <sub>left</sub> =	205.48	in <sup>3</sup>
C <sub>right</sub> =	12.6790	in	A =	71.4358	in <sup>2</sup>	C <sub>right</sub> =	12.6790	in	A =	71.4358	in <sup>2</sup>
C <sub>left</sub> =	9.3830	in	r <sub>y</sub> =	5.1951	in	C <sub>left</sub> =	9.3830	in	r <sub>y</sub> =	5.1951	in



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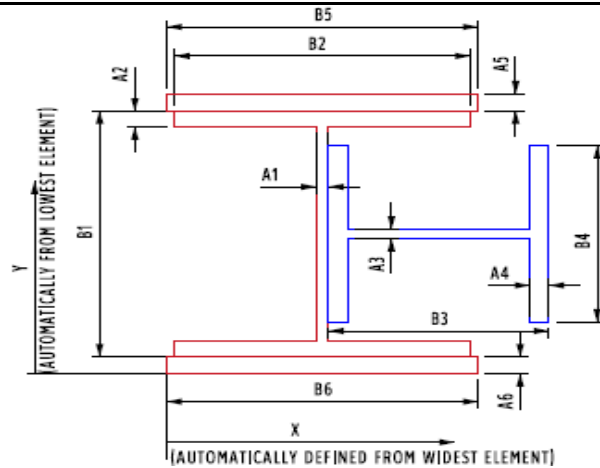
Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	CB16x88	<b>Top Cover Plate</b>
$A_1 = t_w = 0.5040$ in		$A_5 = t = 0.6250$ in
$B_1 = d = 16.1600$ in		$B_5 = b = 16.0000$ in
$A_2 = t_f = 0.7950$ in		<b>Bottom Cover Plate</b>
$B_2 = b_f = 11.5020$ in		$A_6 = t = 0.6250$ in
<b>Rolled Side Section*</b>	WF14x48	$B_6 = b = 16.0000$ in
$A_3 = t_w = 0.3390$ in		
$B_3 = d = 13.8100$ in		
$A_4 = t_f = 0.5930$ in		
$B_4 = b_f = 8.0310$ in		



**Bent 18 North & South Column  
Lower Part with 1 Cover Plate**

\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web plate	7.3433	8.7050	63.9233	129.9056	0.0000	0.0000	129.9056
2	Main Top Flange	9.1441	16.3875	149.8488	0.4816	7.6825	539.6916	540.1732
	Main Bottom Flange	9.1441	1.0225	9.3498	0.4816	7.6825	539.6916	540.1732
3	Side Web Plate	4.2795	8.7050	37.2534	0.0410	0.0000	0.0000	0.0410
4	Side Flange Plates	9.5248	8.7050	82.9131	51.1932	0.0000	0.0000	51.1932
5	Top Cover Plate	10.0000	17.0975	170.9750	0.3255	8.3925	704.3406	704.6661
6	Bottom Cover Plate	10.0000	0.3125	3.1250	0.3255	8.3925	704.3406	704.6661
<b>Total</b>		<b>59.44</b>		<b>517.39</b>	<b>182.75</b>		<b>2488.06</b>	<b>2670.82</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	8.7050	in	$S_{top} = 306.81$ in <sup>3</sup>	y-bar =	8.7050	in	$S_{top} = 306.81$ in <sup>3</sup>
$I_x =$	2670.82	in <sup>4</sup>	$S_{bott.} = 306.81$ in <sup>3</sup>	$I_x =$	2670.82	in <sup>4</sup>	$S_{bott.} = 306.81$ in <sup>3</sup>
$C_{top} =$	8.7050	in	$A = 59.4358$ in <sup>2</sup>	$C_{top} =$	8.7050	in	$A = 59.4358$ in <sup>2</sup>
$C_{bottom} =$	8.7050	in	$r_x = 6.7034$ in	$C_{bottom} =$	8.7050	in	$r_x = 6.7034$ in
			$J = 8.36$ in <sup>4</sup>				



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Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

Y-Axis Section Properties:

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate	7.3433	8.0000	58.7462	0.1554	1.6623	20.2902	20.4456
2	Main Flanges	18.2882	8.0000	146.3054	201.6211	1.6623	50.5319	252.1530
3	Side Web Plate	4.2795	15.1570	64.8649	56.8342	5.4947	129.2087	186.0429
4	Side Left Flange	4.7624	8.5485	40.7112	0.1396	1.1138	5.9075	6.0471
	Side Right Flange	4.7624	21.7655	103.6556	0.1396	12.1032	697.6345	697.7741
5	Top Cover Plate	10.0000	8.0000	80.0000	213.3333	1.6623	27.6309	240.9642
6	Bottom Cover Plate	10.0000	8.0000	80.0000	213.3333	1.6623	27.6309	240.9642
<b>Total</b>		<b>59.44</b>		<b>574.28</b>	<b>685.56</b>		<b>958.83</b>	<b>1644.39</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	9.6623	in	S <sub>right</sub> =	132.61	in <sup>3</sup>	x-bar =	9.6623	in	S <sub>right</sub> =	132.61	in <sup>3</sup>
I <sub>y</sub> =	1644.39	in <sup>4</sup>	S <sub>left</sub> =	170.19	in <sup>3</sup>	I <sub>y</sub> =	1644.39	in <sup>4</sup>	S <sub>left</sub> =	170.19	in <sup>3</sup>
C <sub>right</sub> =	12.3997	in	A =	59.4358	in <sup>2</sup>	C <sub>right</sub> =	12.3997	in	A =	59.4358	in <sup>2</sup>
C <sub>left</sub> =	9.6623	in	r <sub>y</sub> =	5.2599	in	C <sub>left</sub> =	9.6623	in	r <sub>y</sub> =	5.2599	in





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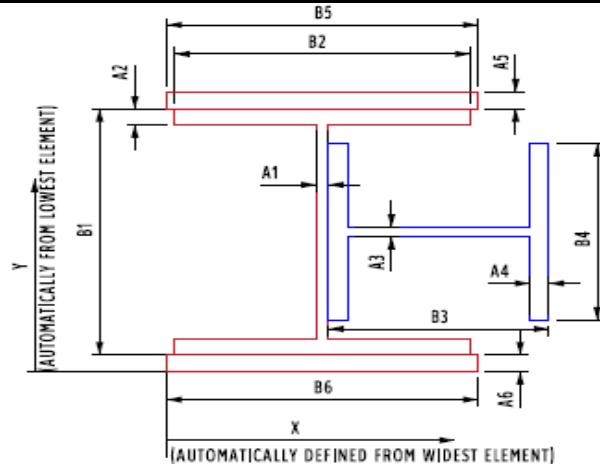
Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	CB16x88	<b>Top Cover Plate</b>	
$A_1 = t_w =$	0.5040 in	$A_5 = t =$	1.0000 in
$B_1 = d =$	16.1600 in	$B_5 = b =$	16.0000 in
$A_2 = t_f =$	0.7950 in	<b>Bottom Cover Plate</b>	
$B_2 = b_f =$	11.5020 in	$A_6 = t =$	1.0000 in
<b>Rolled Side Section*</b>	WF14x48	$B_6 = b =$	16.0000 in
$A_3 = t_w =$	0.3390 in		
$B_3 = d =$	13.8100 in		
$A_4 = t_f =$	0.5930 in		
$B_4 = b_f =$	8.0310 in		



**Bent 19 North & South Column  
Upper Part with 2 Cover Plates**

\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web plate	7.3433	9.0800	66.6770	129.9056	0.0000	0.0000	129.9056
2	Main Top Flange	9.1441	16.7625	153.2778	0.4816	7.6825	539.6916	540.1732
	Main Bottom Flange	9.1441	1.3975	12.7789	0.4816	7.6825	539.6916	540.1732
3	Side Web Plate	4.2795	9.0800	38.8582	0.0410	0.0000	0.0000	0.0410
4	Side Flange Plates	9.5248	9.0800	86.4849	51.1932	0.0000	0.0000	51.1932
5	Top Cover Plate	16.0000	17.6600	282.5600	1.3333	8.5800	1177.8624	1179.1957
6	Bottom Cover Plate	16.0000	0.5000	8.0000	1.3333	8.5800	1177.8624	1179.1957
<b>Total</b>		<b>71.44</b>		<b>648.64</b>	<b>184.77</b>		<b>3435.11</b>	<b>3619.88</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	9.0800 in	S <sub>top</sub> =	398.66 in <sup>3</sup>	y-bar =	9.0800 in	S <sub>top</sub> =	398.66 in <sup>3</sup>
I <sub>x</sub> =	3619.88 in <sup>4</sup>	S <sub>bottom</sub> =	398.66 in <sup>3</sup>	I <sub>x</sub> =	3619.88 in <sup>4</sup>	S <sub>bottom</sub> =	398.66 in <sup>3</sup>
C <sub>top</sub> =	9.0800 in	A =	71.4358 in <sup>2</sup>	C <sub>top</sub> =	9.0800 in	A =	71.4358 in <sup>2</sup>
C <sub>bottom</sub> =	9.0800 in	r <sub>x</sub> =	7.1185 in	C <sub>bottom</sub> =	9.0800 in	r <sub>x</sub> =	7.1185 in
		J =	16.42 in <sup>4</sup>				



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Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

Y-Axis Section Properties:

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate	7.3433	8.0000	58.7462	0.1554	1.3830	14.0459	14.2013
2	Main Flanges	18.2882	8.0000	146.3054	201.6211	1.3830	34.9808	236.6019
3	Side Web Plate	4.2795	15.1570	64.8649	56.8342	5.7740	142.6746	199.5087
4	Side Left Flange	4.7624	8.5485	40.7112	0.1396	0.8345	3.3167	3.4562
	Side Right Flange	4.7624	21.7655	103.6556	0.1396	12.3825	730.1957	730.3353
5	Top Cover Plate	16.0000	8.0000	128.0000	341.3333	1.3830	30.6041	371.9374
6	Bottom Cover Plate	16.0000	8.0000	128.0000	341.3333	1.3830	30.6041	371.9374
<b>Total</b>		<b>71.44</b>		<b>670.28</b>	<b>941.56</b>		<b>986.42</b>	<b>1927.98</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	9.3830	in	S <sub>right</sub> =	152.06	in <sup>3</sup>	x-bar =	9.3830	in	S <sub>right</sub> =	152.06	in <sup>3</sup>
I <sub>y</sub> =	1927.98	in <sup>4</sup>	S <sub>left</sub> =	205.48	in <sup>3</sup>	I <sub>y</sub> =	1927.98	in <sup>4</sup>	S <sub>left</sub> =	205.48	in <sup>3</sup>
C <sub>right</sub> =	12.6790	in	A =	71.4358	in <sup>2</sup>	C <sub>right</sub> =	12.6790	in	A =	71.4358	in <sup>2</sup>
C <sub>left</sub> =	9.3830	in	r <sub>y</sub> =	5.1951	in	C <sub>left</sub> =	9.3830	in	r <sub>y</sub> =	5.1951	in



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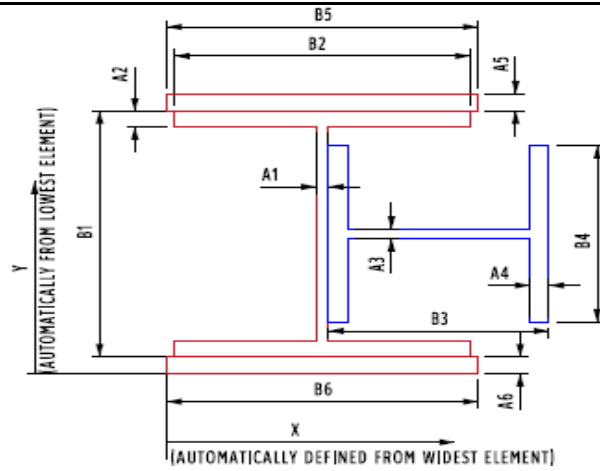
Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	CB16x88	<b>Top Cover Plate</b>
$A_1 = t_w = 0.5040$ in		$A_5 = t = 0.6250$ in
$B_1 = d = 16.1600$ in		$B_5 = b = 16.0000$ in
$A_2 = t_f = 0.7950$ in		<b>Bottom Cover Plate</b>
$B_2 = b_f = 11.5020$ in		$A_6 = t = 0.6250$ in
<b>Rolled Side Section*</b>	WF14x48	$B_6 = b = 16.0000$ in
$A_3 = t_w = 0.3390$ in		
$B_3 = d = 13.8100$ in		
$A_4 = t_f = 0.5930$ in		
$B_4 = b_f = 8.0310$ in		



**Bent 19 North & South Column**  
**Lower Part with 1 Cover Plate**

\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web plate	7.3433	8.7050	63.9233	129.9056	0.0000	0.0000	129.9056
2	Main Top Flange	9.1441	16.3875	149.8488	0.4816	7.6825	539.6916	540.1732
	Main Bottom Flange	9.1441	1.0225	9.3498	0.4816	7.6825	539.6916	540.1732
3	Side Web Plate	4.2795	8.7050	37.2534	0.0410	0.0000	0.0000	0.0410
4	Side Flange Plates	9.5248	8.7050	82.9131	51.1932	0.0000	0.0000	51.1932
5	Top Cover Plate	10.0000	17.0975	170.9750	0.3255	8.3925	704.3406	704.6661
6	Bottom Cover Plate	10.0000	0.3125	3.1250	0.3255	8.3925	704.3406	704.6661
<b>Total</b>		<b>59.44</b>		<b>517.39</b>	<b>182.75</b>		<b>2488.06</b>	<b>2670.82</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	8.7050	in	S <sub>top</sub> = 306.81 in <sup>3</sup>	y-bar =	8.7050	in	S <sub>top</sub> = 306.81 in <sup>3</sup>
I <sub>x</sub> =	2670.82	in <sup>4</sup>	S <sub>bottom</sub> = 306.81 in <sup>3</sup>	I <sub>x</sub> =	2670.82	in <sup>4</sup>	S <sub>bottom</sub> = 306.81 in <sup>3</sup>
C <sub>top</sub> =	8.7050	in	A = 59.4358 in <sup>2</sup>	C <sub>top</sub> =	8.7050	in	A = 59.4358 in <sup>2</sup>
C <sub>bottom</sub> =	8.7050	in	r <sub>x</sub> = 6.7034 in	C <sub>bottom</sub> =	8.7050	in	r <sub>x</sub> = 6.7034 in
			J = 8.36 in <sup>4</sup>				



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate	7.3433	8.0000	58.7462	0.1554	1.6623	20.2902	20.4456
2	Main Flanges	18.2882	8.0000	146.3054	201.6211	1.6623	50.5319	252.1530
3	Side Web Plate	4.2795	15.1570	64.8649	56.8342	5.4947	129.2087	186.0429
4	Side Left Flange	4.7624	8.5485	40.7112	0.1396	1.1138	5.9075	6.0471
	Side Right Flange	4.7624	21.7655	103.6556	0.1396	12.1032	697.6345	697.7741
5	Top Cover Plate	10.0000	8.0000	80.0000	213.3333	1.6623	27.6309	240.9642
6	Bottom Cover Plate	10.0000	8.0000	80.0000	213.3333	1.6623	27.6309	240.9642
<b>Total</b>		<b>59.44</b>		<b>574.28</b>	<b>685.56</b>		<b>958.83</b>	<b>1644.39</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	9.6623	in	S <sub>right</sub> =	132.61	in <sup>3</sup>	x-bar =	9.6623	in	S <sub>right</sub> =	132.61	in <sup>3</sup>
I <sub>y</sub> =	1644.39	in <sup>4</sup>	S <sub>left</sub> =	170.19	in <sup>3</sup>	I <sub>y</sub> =	1644.39	in <sup>4</sup>	S <sub>left</sub> =	170.19	in <sup>3</sup>
C <sub>right</sub> =	12.3997	in	A =	59.4358	in <sup>2</sup>	C <sub>right</sub> =	12.3997	in	A =	59.4358	in <sup>2</sup>
C <sub>left</sub> =	9.6623	in	r <sub>y</sub> =	5.2599	in	C <sub>left</sub> =	9.6623	in	r <sub>y</sub> =	5.2599	in



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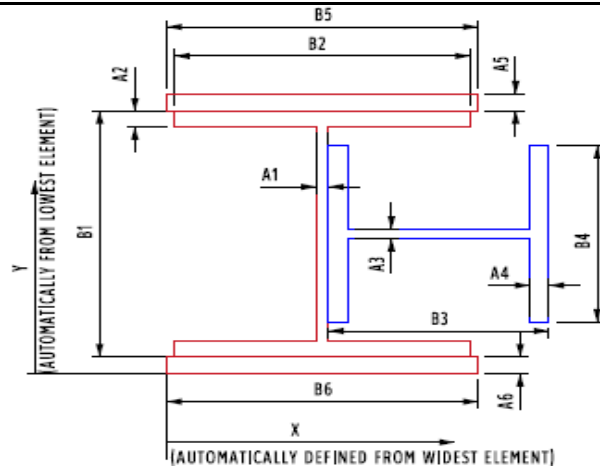
Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	CB16x114	<b>Top Cover Plate</b>
$A_1 = t_w = 0.6310$ in		$A_5 = t = 1.6250$ in
$B_1 = d = 16.6400$ in		$B_5 = b = 16.0000$ in
$A_2 = t_f = 1.0350$ in		<b>Bottom Cover Plate</b>
$B_2 = b_f = 11.6290$ in		$A_6 = t = 1.6250$ in
<b>Rolled Side Section*</b>	WF14x68	$B_6 = b = 16.0000$ in
$A_3 = t_w = 0.4180$ in		
$B_3 = d = 14.0600$ in		
$A_4 = t_f = 0.7180$ in		
$B_4 = b_f = 10.0400$ in		



\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web plate	9.1937	9.9450	91.4310	162.6398	0.0000	0.0000	162.6398
2	Main Top Flange	12.0360	17.7475	213.6092	1.0744	7.8025	732.7406	733.8151
	Main Bottom Flange	12.0360	2.1425	25.7872	1.0744	7.8025	732.7406	733.8151
3	Side Web Plate	5.2768	9.9450	52.4781	0.0768	0.0000	0.0000	0.0768
4	Side Flange Plates	14.4174	9.9450	143.3814	121.1084	0.0000	0.0000	121.1084
5	Top Cover Plate	26.0000	19.0775	496.0150	5.7214	9.1325	2168.4665	2174.1878
6	Bottom Cover Plate	26.0000	0.8125	21.1250	5.7214	9.1325	2168.4665	2174.1878
<b>Total</b>		<b>104.96</b>		<b>1043.83</b>	<b>297.42</b>		<b>5802.41</b>	<b>6099.83</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

**Bent 20 North Column**  
**Upper Part with 2 Cover Plates**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	9.9450	in	S <sub>top</sub> = 613.36 in <sup>3</sup>	y-bar =	9.9450	in	S <sub>top</sub> = 613.36 in <sup>3</sup>
I <sub>x</sub> =	6099.83	in <sup>4</sup>	S <sub>bottom</sub> = 613.36 in <sup>3</sup>	I <sub>x</sub> =	6099.83	in <sup>4</sup>	S <sub>bottom</sub> = 613.36 in <sup>3</sup>
C <sub>top</sub> =	9.9450	in	A = 104.9600 in <sup>2</sup>	C <sub>top</sub> =	9.9450	in	A = 104.9600 in <sup>2</sup>
C <sub>bottom</sub> =	9.9450	in	r <sub>x</sub> = 7.6234 in	C <sub>bottom</sub> =	9.9450	in	r <sub>x</sub> = 7.6234 in
			J = 58.37 in <sup>4</sup>				



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Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate	9.1937	8.0000	73.5494	0.3050	1.3783	17.4648	17.7699
2	Main Flanges	24.0720	8.0000	192.5762	271.2790	1.3783	45.7286	317.0076
3	Side Web Plate	5.2768	15.3455	80.9756	70.0787	5.9672	187.8959	257.9746
4	Side Left Flange	7.2087	8.6745	62.5320	0.3097	0.7038	3.5705	3.8802
	Side Right Flange	7.2087	22.0165	158.7108	0.3097	12.6382	1151.4099	1151.7196
5	Top Cover Plate	26.0000	8.0000	208.0000	554.6667	1.3783	49.3911	604.0577
6	Bottom Cover Plate	26.0000	8.0000	208.0000	554.6667	1.3783	49.3911	604.0577
<b>Total</b>		<b>104.96</b>		<b>984.34</b>	<b>1451.62</b>		<b>1504.85</b>	<b>2956.47</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	9.3783	in	S <sub>right</sub> =	227.47	in <sup>3</sup>	x-bar =	9.3783	in	S <sub>right</sub> =	227.47	in <sup>3</sup>
I <sub>y</sub> =	2956.47	in <sup>4</sup>	S <sub>left</sub> =	315.25	in <sup>3</sup>	I <sub>y</sub> =	2956.47	in <sup>4</sup>	S <sub>left</sub> =	315.25	in <sup>3</sup>
C <sub>right</sub> =	12.9972	in	A =	104.9600	in <sup>2</sup>	C <sub>right</sub> =	12.9972	in	A =	104.9600	in <sup>2</sup>
C <sub>left</sub> =	9.3783	in	r <sub>y</sub> =	5.3073	in	C <sub>left</sub> =	9.3783	in	r <sub>y</sub> =	5.3073	in



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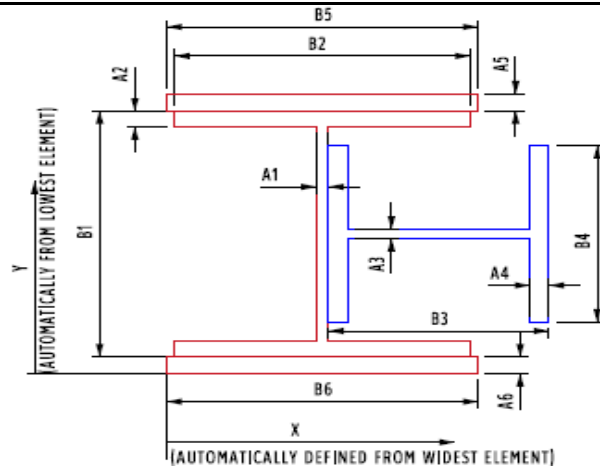
Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	CB16x114	<b>Top Cover Plate</b>
$A_1 = t_w = 0.6310$	in	$A_5 = t = 1.0000$
$B_1 = d = 16.6400$	in	$B_5 = b = 16.0000$
$A_2 = t_f = 1.0350$	in	<b>Bottom Cover Plate</b>
$B_2 = b_f = 11.6290$	in	$A_6 = t = 1.0000$
<b>Rolled Side Section*</b>	WF14x68	$B_6 = b = 16.0000$
$A_3 = t_w = 0.4180$	in	
$B_3 = d = 14.0600$	in	
$A_4 = t_f = 0.7180$	in	
$B_4 = b_f = 10.0400$	in	



\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web plate	9.1937	9.3200	85.6850	162.6398	0.0000	0.0000	162.6398
2	Main Top Flange	12.0360	17.1225	206.0867	1.0744	7.8025	732.7406	733.8151
	Main Bottom Flange	12.0360	1.5175	18.2647	1.0744	7.8025	732.7406	733.8151
3	Side Web Plate	5.2768	9.3200	49.1801	0.0768	0.0000	0.0000	0.0768
4	Side Flange Plates	14.4174	9.3200	134.3705	121.1084	0.0000	0.0000	121.1084
5	Top Cover Plate	16.0000	18.1400	290.2400	1.3333	8.8200	1244.6784	1246.0117
6	Bottom Cover Plate	16.0000	0.5000	8.0000	1.3333	8.8200	1244.6784	1246.0117
<b>Total</b>		<b>84.96</b>		<b>791.83</b>	<b>288.64</b>		<b>3954.84</b>	<b>4243.48</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	9.3200	in	$S_{top} = 455.31$	in <sup>3</sup>	y-bar =	9.3200	in	$S_{top} = 455.31$	in <sup>3</sup>		
$I_x =$	4243.48	in <sup>4</sup>	$S_{bott.} = 455.31$	in <sup>3</sup>	$I_x =$	4243.48	in <sup>4</sup>	$S_{bott.} = 455.31$	in <sup>3</sup>		
$C_{top} =$	9.3200	in	A =	84.9600	in <sup>2</sup>	$C_{top} =$	9.3200	in	A =	84.9600	in <sup>2</sup>
$C_{bottom} =$	9.3200	in	$r_x =$	7.0673	in	$C_{bottom} =$	9.3200	in	$r_x =$	7.0673	in
			J =	23.27	in <sup>4</sup>						



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Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

Y-Axis Section Properties:

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate	9.1937	8.0000	73.5494	0.3050	1.7027	26.6553	26.9603
2	Main Flanges	24.0720	8.0000	192.5762	271.2790	1.7027	69.7922	341.0712
3	Side Web Plate	5.2768	15.3455	80.9756	70.0787	5.6428	168.0186	238.0973
4	Side Left Flange	7.2087	8.6745	62.5320	0.3097	1.0282	7.6215	7.9312
	Side Right Flange	7.2087	22.0165	158.7108	0.3097	12.3138	1093.0497	1093.3594
5	Top Cover Plate	16.0000	8.0000	128.0000	341.3333	1.7027	46.3889	387.7222
6	Bottom Cover Plate	16.0000	8.0000	128.0000	341.3333	1.7027	46.3889	387.7222
<b>Total</b>		<b>84.96</b>		<b>824.34</b>	<b>1024.95</b>		<b>1457.91</b>	<b>2482.86</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	9.7027	in	S <sub>right</sub> =	195.92	in <sup>3</sup>	x-bar =	9.7027	in	S <sub>right</sub> =	195.92	in <sup>3</sup>
I <sub>y</sub> =	2482.86	in <sup>4</sup>	S <sub>left</sub> =	255.89	in <sup>3</sup>	I <sub>y</sub> =	2482.86	in <sup>4</sup>	S <sub>left</sub> =	255.89	in <sup>3</sup>
C <sub>right</sub> =	12.6728	in	A =	84.9600	in <sup>2</sup>	C <sub>right</sub> =	12.6728	in	A =	84.9600	in <sup>2</sup>
C <sub>left</sub> =	9.7027	in	r <sub>y</sub> =	5.4059	in	C <sub>left</sub> =	9.7027	in	r <sub>y</sub> =	5.4059	in





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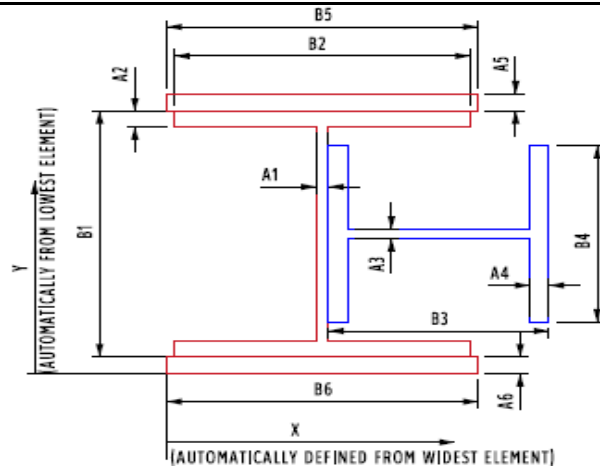
Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	CB16x114	<b>Top Cover Plate</b>
$A_1 = t_w = 0.6310$ in		$A_5 = t = 1.5000$ in
$B_1 = d = 16.6400$ in		$B_5 = b = 16.0000$ in
$A_2 = t_f = 1.0350$ in		<b>Bottom Cover Plate</b>
$B_2 = b_f = 11.6290$ in		$A_6 = t = 1.5000$ in
<b>Rolled Side Section*</b>	WF14x74	$B_6 = b = 16.0000$ in
$A_3 = t_w = 0.4500$ in		
$B_3 = d = 14.1900$ in		
$A_4 = t_f = 0.7830$ in		
$B_4 = b_f = 10.0720$ in		



\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web plate	9.1937	9.8200	90.2818	162.6398	0.0000	0.0000	162.6398
2	Main Top Flange	12.0360	17.6225	212.1047	1.0744	7.8025	732.7406	733.8151
	Main Bottom Flange	12.0360	2.0175	24.2827	1.0744	7.8025	732.7406	733.8151
3	Side Web Plate	5.6808	9.8200	55.7855	0.0959	0.0000	0.0000	0.0959
4	Side Flange Plates	15.7728	9.8200	154.8884	133.3391	0.0000	0.0000	133.3391
5	Top Cover Plate	24.0000	18.8900	453.3600	4.5000	9.0700	1974.3576	1978.8576
6	Bottom Cover Plate	24.0000	0.7500	18.0000	4.5000	9.0700	1974.3576	1978.8576
<b>Total</b>		<b>102.72</b>		<b>1008.70</b>	<b>307.22</b>		<b>5414.20</b>	<b>5721.42</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

**Bent 20 South Column**  
**Upper Part with 2 Cover Plates**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	9.8200 in	$S_{top} =$	582.63 in <sup>3</sup>	y-bar =	9.8200 in	$S_{top} =$	582.63 in <sup>3</sup>
$I_x =$	5721.42 in <sup>4</sup>	$S_{bott.} =$	582.63 in <sup>3</sup>	$I_x =$	5721.42 in <sup>4</sup>	$S_{bott.} =$	582.63 in <sup>3</sup>
$C_{top} =$	9.8200 in	A =	102.7193 in <sup>2</sup>	$C_{top} =$	9.8200 in	A =	102.7193 in <sup>2</sup>
$C_{bottom} =$	9.8200 in	$r_x =$	7.4632 in	$C_{bottom} =$	9.8200 in	$r_x =$	7.4632 in
		J =	49.42 in <sup>4</sup>				



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Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

Y-Axis Section Properties:

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate	9.1937	8.0000	73.5494	0.3050	1.5477	22.0231	22.3282
2	Main Flanges	24.0720	8.0000	192.5762	271.2790	1.5477	57.6637	328.9427
3	Side Web Plate	5.6808	15.4105	87.5440	75.4436	5.8628	195.2609	270.7045
4	Side Left Flange	7.8864	8.7070	68.6667	0.4029	0.8407	5.5743	5.9772
	Side Right Flange	7.8864	22.1140	174.3993	0.4029	12.5663	1245.3469	1245.7498
5	Top Cover Plate	24.0000	8.0000	192.0000	512.0000	1.5477	57.4911	569.4911
6	Bottom Cover Plate	24.0000	8.0000	192.0000	512.0000	1.5477	57.4911	569.4911
<b>Total</b>		<b>102.72</b>		<b>980.74</b>	<b>1371.83</b>		<b>1640.85</b>	<b>3012.68</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	9.5477	in	S <sub>right</sub> =	232.50	in <sup>3</sup>	x-bar =	9.5477	in	S <sub>right</sub> =	232.50	in <sup>3</sup>
I <sub>y</sub> =	3012.68	in <sup>4</sup>	S <sub>left</sub> =	315.54	in <sup>3</sup>	I <sub>y</sub> =	3012.68	in <sup>4</sup>	S <sub>left</sub> =	315.54	in <sup>3</sup>
C <sub>right</sub> =	12.9578	in	A =	102.7193	in <sup>2</sup>	C <sub>right</sub> =	12.9578	in	A =	102.7193	in <sup>2</sup>
C <sub>left</sub> =	9.5477	in	r <sub>y</sub> =	5.4157	in	C <sub>left</sub> =	9.5477	in	r <sub>y</sub> =	5.4157	in



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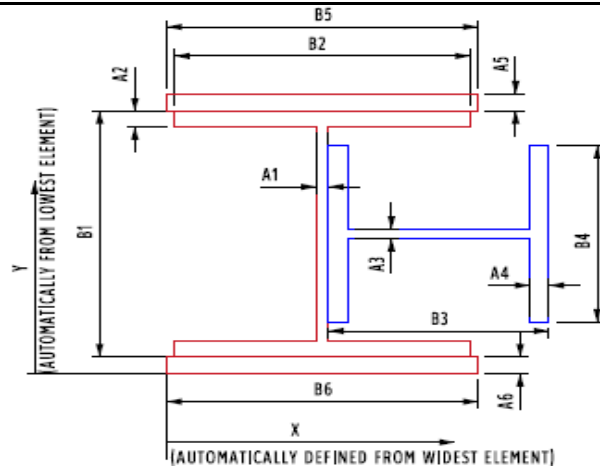
Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	CB16x114	<b>Top Cover Plate</b>
$A_1 = t_w = 0.6310$ in		$A_5 = t = 0.7500$ in
$B_1 = d = 16.6400$ in		$B_5 = b = 16.0000$ in
$A_2 = t_f = 1.0350$ in		<b>Bottom Cover Plate</b>
$B_2 = b_f = 11.6290$ in		$A_6 = t = 0.7500$ in
<b>Rolled Side Section*</b>	WF14x74	$B_6 = b = 16.0000$ in
$A_3 = t_w = 0.4500$ in		
$B_3 = d = 14.1900$ in		
$A_4 = t_f = 0.7830$ in		
$B_4 = b_f = 10.0720$ in		



\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web plate	9.1937	9.0700	83.3866	162.6398	0.0000	0.0000	162.6398
2	Main Top Flange	12.0360	16.8725	203.0777	1.0744	7.8025	732.7406	733.8151
	Main Bottom Flange	12.0360	1.2675	15.2556	1.0744	7.8025	732.7406	733.8151
3	Side Web Plate	5.6808	9.0700	51.5249	0.0959	0.0000	0.0000	0.0959
4	Side Flange Plates	15.7728	9.0700	143.0589	133.3391	0.0000	0.0000	133.3391
5	Top Cover Plate	12.0000	17.7650	213.1800	0.5625	8.6950	907.2363	907.7988
6	Bottom Cover Plate	12.0000	0.3750	4.5000	0.5625	8.6950	907.2363	907.7988
<b>Total</b>		<b>78.72</b>		<b>713.98</b>	<b>299.35</b>		<b>3279.95</b>	<b>3579.30</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	9.0700	in	S <sub>top</sub> = 394.63 in <sup>3</sup>	y-bar =	9.0700	in	S <sub>top</sub> = 394.63 in <sup>3</sup>
I <sub>x</sub> =	3579.30	in <sup>4</sup>	S <sub>bottom</sub> = 394.63 in <sup>3</sup>	I <sub>x</sub> =	3579.30	in <sup>4</sup>	S <sub>bottom</sub> = 394.63 in <sup>3</sup>
C <sub>top</sub> =	9.0700	in	A = 78.7193 in <sup>2</sup>	C <sub>top</sub> =	9.0700	in	A = 78.7193 in <sup>2</sup>
C <sub>bottom</sub> =	9.0700	in	r <sub>x</sub> = 6.7431 in	C <sub>bottom</sub> =	9.0700	in	r <sub>x</sub> = 6.7431 in
			J = 17.92 in <sup>4</sup>				



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Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

Y-Axis Section Properties:

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate	9.1937	8.0000	73.5494	0.3050	2.0196	37.4991	37.8041
2	Main Flanges	24.0720	8.0000	192.5762	271.2790	2.0196	98.1848	369.4638
3	Side Web Plate	5.6808	15.4105	87.5440	75.4436	5.3909	165.0942	240.5377
4	Side Left Flange	7.8864	8.7070	68.6667	0.4029	1.3126	13.5876	13.9905
	Side Right Flange	7.8864	22.1140	174.3993	0.4029	12.0944	1153.5754	1153.9784
5	Top Cover Plate	12.0000	8.0000	96.0000	256.0000	2.0196	48.9455	304.9455
6	Bottom Cover Plate	12.0000	8.0000	96.0000	256.0000	2.0196	48.9455	304.9455
<b>Total</b>		<b>78.72</b>		<b>788.74</b>	<b>859.83</b>		<b>1565.83</b>	<b>2425.67</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	10.0196	in	S <sub>right</sub> =	194.27	in <sup>3</sup>	x-bar =	10.0196	in	S <sub>right</sub> =	194.27	in <sup>3</sup>
I <sub>y</sub> =	2425.67	in <sup>4</sup>	S <sub>left</sub> =	242.09	in <sup>3</sup>	I <sub>y</sub> =	2425.67	in <sup>4</sup>	S <sub>left</sub> =	242.09	in <sup>3</sup>
C <sub>right</sub> =	12.4859	in	A =	78.7193	in <sup>2</sup>	C <sub>right</sub> =	12.4859	in	A =	78.7193	in <sup>2</sup>
C <sub>left</sub> =	10.0196	in	r <sub>y</sub> =	5.5510	in	C <sub>left</sub> =	10.0196	in	r <sub>y</sub> =	5.5510	in



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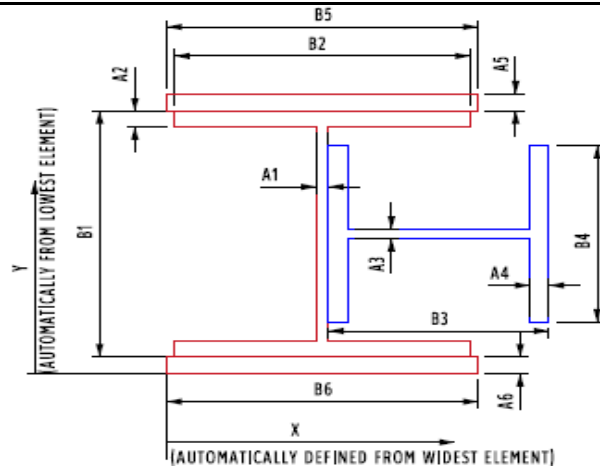
Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	CB16x114	<b>Top Cover Plate</b>
$A_1 = t_w = 0.6310$ in		$A_5 = t = 1.0000$ in
$B_1 = d = 16.6400$ in		$B_5 = b = 16.0000$ in
$A_2 = t_f = 1.0350$ in		<b>Bottom Cover Plate</b>
$B_2 = b_f = 11.6290$ in		$A_6 = t = 1.0000$ in
<b>Rolled Side Section*</b>	WF14x58	$B_6 = b = 16.0000$ in
$A_3 = t_w = 0.4060$ in		
$B_3 = d = 14.0600$ in		
$A_4 = t_f = 0.7180$ in		
$B_4 = b_f = 8.0980$ in		



\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web plate	9.1937	9.3200	85.6850	162.6398	0.0000	0.0000	162.6398
2	Main Top Flange	12.0360	17.1225	206.0867	1.0744	7.8025	732.7406	733.8151
	Main Bottom Flange	12.0360	1.5175	18.2647	1.0744	7.8025	732.7406	733.8151
3	Side Web Plate	5.1253	9.3200	47.7682	0.0704	0.0000	0.0000	0.0704
4	Side Flange Plates	11.6287	9.3200	108.3797	63.5487	0.0000	0.0000	63.5487
5	Top Cover Plate	16.0000	18.1400	290.2400	1.3333	8.8200	1244.6784	1246.0117
6	Bottom Cover Plate	16.0000	0.5000	8.0000	1.3333	8.8200	1244.6784	1246.0117
<b>Total</b>		<b>82.02</b>		<b>764.42</b>	<b>231.07</b>		<b>3954.84</b>	<b>4185.91</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	9.3200	in	S <sub>top</sub> = 449.13 in <sup>3</sup>	y-bar =	9.3200	in	S <sub>top</sub> = 449.13 in <sup>3</sup>
I <sub>x</sub> =	4185.91	in <sup>4</sup>	S <sub>bottom</sub> = 449.13 in <sup>3</sup>	I <sub>x</sub> =	4185.91	in <sup>4</sup>	S <sub>bottom</sub> = 449.13 in <sup>3</sup>
C <sub>top</sub> =	9.3200	in	A = 82.0198 in <sup>2</sup>	C <sub>top</sub> =	9.3200	in	A = 82.0198 in <sup>2</sup>
C <sub>bottom</sub> =	9.3200	in	r <sub>x</sub> = 7.1439 in	C <sub>bottom</sub> =	9.3200	in	r <sub>x</sub> = 7.1439 in
			J = 22.76 in <sup>4</sup>				



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate	9.1937	8.0000	73.5494	0.3050	1.5005	20.6983	21.0034
2	Main Flanges	24.0720	8.0000	192.5762	271.2790	1.5005	54.1950	325.4740
3	Side Web Plate	5.1253	15.3455	78.6510	68.0669	5.8450	175.1050	243.1719
4	Side Left Flange	5.8144	8.6745	50.4367	0.2498	0.8260	3.9666	4.2164
	Side Right Flange	5.8144	22.0165	128.0119	0.2498	12.5160	910.8281	911.0778
5	Top Cover Plate	16.0000	8.0000	128.0000	341.3333	1.5005	36.0219	377.3552
6	Bottom Cover Plate	16.0000	8.0000	128.0000	341.3333	1.5005	36.0219	377.3552
<b>Total</b>		<b>82.02</b>		<b>779.23</b>	<b>1022.82</b>		<b>1236.84</b>	<b>2259.65</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	9.5005	in	S <sub>right</sub> =	175.51	in <sup>3</sup>	x-bar =	9.5005	in	S <sub>right</sub> =	175.51	in <sup>3</sup>
I <sub>y</sub> =	2259.65	in <sup>4</sup>	S <sub>left</sub> =	237.85	in <sup>3</sup>	I <sub>y</sub> =	2259.65	in <sup>4</sup>	S <sub>left</sub> =	237.85	in <sup>3</sup>
C <sub>right</sub> =	12.8750	in	A =	82.0198	in <sup>2</sup>	C <sub>right</sub> =	12.8750	in	A =	82.0198	in <sup>2</sup>
C <sub>left</sub> =	9.5005	in	r <sub>y</sub> =	5.2488	in	C <sub>left</sub> =	9.5005	in	r <sub>y</sub> =	5.2488	in



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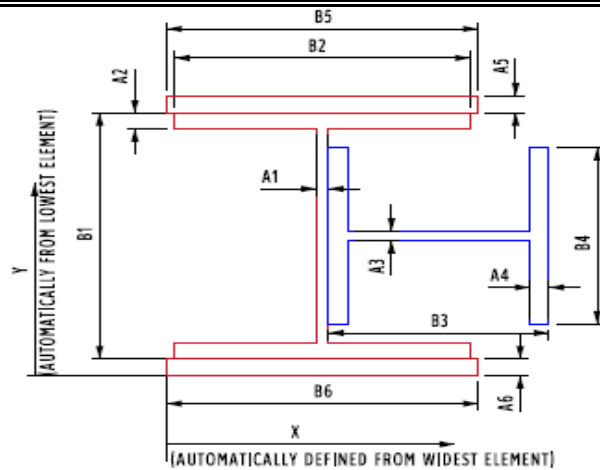
Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	CB16x114	<b>Top Cover Plate</b>
$A_1 = t_w = 0.6310$ in		$A_5 = t = 1.2500$ in
$B_1 = d = 16.6400$ in		$B_5 = b = 16.0000$ in
$A_2 = t_f = 1.0350$ in		<b>Bottom Cover Plate</b>
$B_2 = b_f = 11.6290$ in		$A_6 = t = 1.2500$ in
<b>Rolled Side Section*</b>	WF14x74	$B_6 = b = 16.0000$ in
$A_3 = t_w = 0.4500$ in		
$B_3 = d = 14.1900$ in		
$A_4 = t_f = 0.7830$ in		
$B_4 = b_f = 10.0720$ in		



\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web plate	9.1937	9.5700	87.9834	162.6398	0.0000	0.0000	162.6398
2	Main Top Flange	12.0360	17.3725	209.0957	1.0744	7.8025	732.7406	733.8151
	Main Bottom Flange	12.0360	1.7675	21.2737	1.0744	7.8025	732.7406	733.8151
3	Side Web Plate	5.6808	9.5700	54.3653	0.0959	0.0000	0.0000	0.0959
4	Side Flange Plates	15.7728	9.5700	150.9452	133.3391	0.0000	0.0000	133.3391
5	Top Cover Plate	20.0000	18.5150	370.3000	2.6042	8.9450	1600.2605	1602.8647
6	Bottom Cover Plate	20.0000	0.6250	12.5000	2.6042	8.9450	1600.2605	1602.8647
<b>Total</b>		<b>94.72</b>		<b>906.46</b>	<b>303.43</b>		<b>4666.00</b>	<b>4969.43</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	9.5700	in	S <sub>top</sub> = 519.27 in <sup>3</sup>	y-bar =	9.5700	in	S <sub>top</sub> = 519.27 in <sup>3</sup>
I <sub>x</sub> =	4969.43	in <sup>4</sup>	S <sub>bottom</sub> = 519.27 in <sup>3</sup>	I <sub>x</sub> =	4969.43	in <sup>4</sup>	S <sub>bottom</sub> = 519.27 in <sup>3</sup>
C <sub>top</sub> =	9.5700	in	A = 94.7193 in <sup>2</sup>	C <sub>top</sub> =	9.5700	in	A = 94.7193 in <sup>2</sup>
C <sub>bottom</sub> =	9.5700	in	r <sub>x</sub> = 7.2433 in	C <sub>bottom</sub> =	9.5700	in	r <sub>x</sub> = 7.2433 in
			J = 34.26 in <sup>4</sup>				



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Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate	9.1937	8.0000	73.5494	0.3050	1.6785	25.9004	26.2054
2	Main Flanges	24.0720	8.0000	192.5762	271.2790	1.6785	67.8156	339.0946
3	Side Web Plate	5.6808	15.4105	87.5440	75.4436	5.7320	186.6506	262.0942
4	Side Left Flange	7.8864	8.7070	68.6667	0.4029	0.9715	7.4425	7.8454
	Side Right Flange	7.8864	22.1140	174.3993	0.4029	12.4355	1219.5720	1219.9750
5	Top Cover Plate	20.0000	8.0000	160.0000	426.6667	1.6785	56.3439	483.0106
6	Bottom Cover Plate	20.0000	8.0000	160.0000	426.6667	1.6785	56.3439	483.0106
<b>Total</b>		<b>94.72</b>		<b>916.74</b>	<b>1201.17</b>		<b>1620.07</b>	<b>2821.24</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	9.6785	in	S <sub>right</sub> =	219.94	in <sup>3</sup>	x-bar =	9.6785	in	S <sub>right</sub> =	219.94	in <sup>3</sup>
I <sub>y</sub> =	2821.24	in <sup>4</sup>	S <sub>left</sub> =	291.50	in <sup>3</sup>	I <sub>y</sub> =	2821.24	in <sup>4</sup>	S <sub>left</sub> =	291.50	in <sup>3</sup>
C <sub>right</sub> =	12.8270	in	A =	94.7193	in <sup>2</sup>	C <sub>right</sub> =	12.8270	in	A =	94.7193	in <sup>2</sup>
C <sub>left</sub> =	9.6785	in	r <sub>y</sub> =	5.4576	in	C <sub>left</sub> =	9.6785	in	r <sub>y</sub> =	5.4576	in





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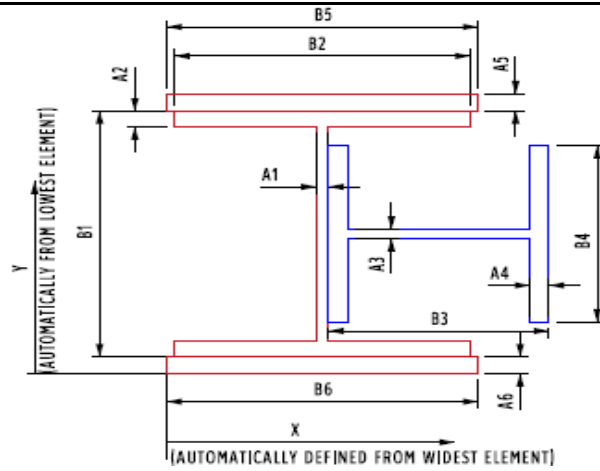
Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	CB16x114	<b>Top Cover Plate</b>
$A_1 = t_w = 0.6310$ in		$A_5 = t = 0.7500$ in
$B_1 = d = 16.6400$ in		$B_5 = b = 16.0000$ in
$A_2 = t_f = 1.0350$ in		<b>Bottom Cover Plate</b>
$B_2 = b_f = 11.6290$ in		$A_6 = t = 0.7500$ in
<b>Rolled Side Section*</b>	WF14x68	$B_6 = b = 16.0000$ in
$A_3 = t_w = 0.4180$ in		
$B_3 = d = 14.0600$ in		
$A_4 = t_f = 0.7180$ in		
$B_4 = b_f = 10.0400$ in		



\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web plate	9.1937	9.0700	83.3866	162.6398	0.0000	0.0000	162.6398
2	Main Top Flange	12.0360	16.8725	203.0777	1.0744	7.8025	732.7406	733.8151
	Main Bottom Flange	12.0360	1.2675	15.2556	1.0744	7.8025	732.7406	733.8151
3	Side Web Plate	5.2768	9.0700	47.8609	0.0768	0.0000	0.0000	0.0768
4	Side Flange Plates	14.4174	9.0700	130.7662	121.1084	0.0000	0.0000	121.1084
5	Top Cover Plate	12.0000	17.7650	213.1800	0.5625	8.6950	907.2363	907.7988
6	Bottom Cover Plate	12.0000	0.3750	4.5000	0.5625	8.6950	907.2363	907.7988
<b>Total</b>		<b>76.96</b>		<b>698.03</b>	<b>287.10</b>		<b>3279.95</b>	<b>3567.05</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	9.0700	in	S <sub>top</sub> = 393.28 in <sup>3</sup>	y-bar =	9.0700	in	S <sub>top</sub> = 393.28 in <sup>3</sup>
I <sub>x</sub> =	3567.05	in <sup>4</sup>	S <sub>bottom</sub> = 393.28 in <sup>3</sup>	I <sub>x</sub> =	3567.05	in <sup>4</sup>	S <sub>bottom</sub> = 393.28 in <sup>3</sup>
C <sub>top</sub> =	9.0700	in	A = 76.9600 in <sup>2</sup>	C <sub>top</sub> =	9.0700	in	A = 76.9600 in <sup>2</sup>
C <sub>bottom</sub> =	9.0700	in	r <sub>x</sub> = 6.8080 in	C <sub>bottom</sub> =	9.0700	in	r <sub>x</sub> = 6.8080 in
			J = 17.1 in <sup>4</sup>				



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Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

Y-Axis Section Properties:

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate	9.1937	8.0000	73.5494	0.3050	1.8797	32.4849	32.7900
2	Main Flanges	24.0720	8.0000	192.5762	271.2790	1.8797	85.0561	356.3351
3	Side Web Plate	5.2768	15.3455	80.9756	70.0787	5.4658	157.6432	227.7219
4	Side Left Flange	7.2087	8.6745	62.5320	0.3097	1.2052	10.4713	10.7810
	Side Right Flange	7.2087	22.0165	158.7108	0.3097	12.1368	1061.8523	1062.1620
5	Top Cover Plate	12.0000	8.0000	96.0000	256.0000	1.8797	42.4008	298.4008
6	Bottom Cover Plate	12.0000	8.0000	96.0000	256.0000	1.8797	42.4008	298.4008
<b>Total</b>		<b>76.96</b>		<b>760.34</b>	<b>854.28</b>		<b>1432.31</b>	<b>2286.59</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	9.8797	in	S <sub>right</sub> =	182.99	in <sup>3</sup>	x-bar =	9.8797	in	S <sub>right</sub> =	182.99	in <sup>3</sup>
I <sub>y</sub> =	2286.59	in <sup>4</sup>	S <sub>left</sub> =	231.44	in <sup>3</sup>	I <sub>y</sub> =	2286.59	in <sup>4</sup>	S <sub>left</sub> =	231.44	in <sup>3</sup>
C <sub>right</sub> =	12.4958	in	A =	76.9600	in <sup>2</sup>	C <sub>right</sub> =	12.4958	in	A =	76.9600	in <sup>2</sup>
C <sub>left</sub> =	9.8797	in	r <sub>y</sub> =	5.4508	in	C <sub>left</sub> =	9.8797	in	r <sub>y</sub> =	5.4508	in



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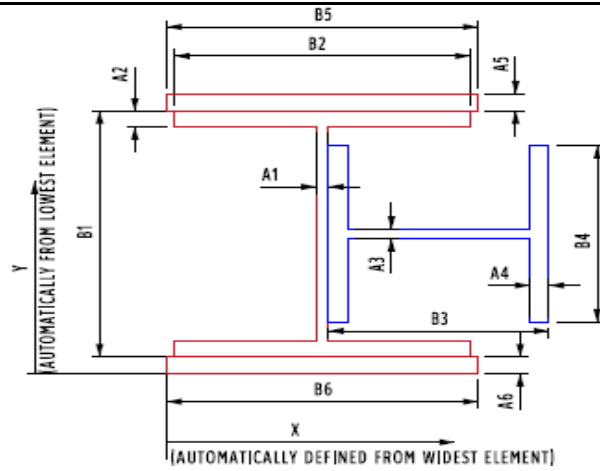
Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	CB16x114	<b>Top Cover Plate</b>
$A_1 = t_w = 0.6310$ in		$A_5 = t = 1.3750$ in
$B_1 = d = 16.6400$ in		$B_5 = b = 16.0000$ in
$A_2 = t_f = 1.0350$ in		<b>Bottom Cover Plate</b>
$B_2 = b_f = 11.6290$ in		$A_6 = t = 1.3750$ in
<b>Rolled Side Section*</b>	WF14x74	$B_6 = b = 16.0000$ in
$A_3 = t_w = 0.4500$ in		
$B_3 = d = 14.1900$ in		
$A_4 = t_f = 0.7830$ in		
$B_4 = b_f = 10.0720$ in		



\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web plate	9.1937	9.6950	89.1326	162.6398	0.0000	0.0000	162.6398
2	Main Top Flange	12.0360	17.4975	210.6002	1.0744	7.8025	732.7406	733.8151
	Main Bottom Flange	12.0360	1.8925	22.7782	1.0744	7.8025	732.7406	733.8151
3	Side Web Plate	5.6808	9.6950	55.0754	0.0959	0.0000	0.0000	0.0959
4	Side Flange Plates	15.7728	9.6950	152.9168	133.3391	0.0000	0.0000	133.3391
5	Top Cover Plate	22.0000	18.7025	411.4550	3.4661	9.0075	1784.9712	1788.4374
6	Bottom Cover Plate	22.0000	0.6875	15.1250	3.4661	9.0075	1784.9712	1788.4374
<b>Total</b>		<b>98.72</b>		<b>957.08</b>	<b>305.16</b>		<b>5035.42</b>	<b>5340.58</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	9.6950	in	S <sub>top</sub> = 550.86 in <sup>3</sup>	y-bar =	9.6950	in	S <sub>top</sub> = 550.86 in <sup>3</sup>
I <sub>x</sub> =	5340.58	in <sup>4</sup>	S <sub>bottom</sub> = 550.86 in <sup>3</sup>	I <sub>x</sub> =	5340.58	in <sup>4</sup>	S <sub>bottom</sub> = 550.86 in <sup>3</sup>
C <sub>top</sub> =	9.6950	in	A = 98.7193 in <sup>2</sup>	C <sub>top</sub> =	9.6950	in	A = 98.7193 in <sup>2</sup>
C <sub>bottom</sub> =	9.6950	in	r <sub>x</sub> = 7.3552 in	C <sub>bottom</sub> =	9.6950	in	r <sub>x</sub> = 7.3552 in
			J = 41.15 in <sup>4</sup>				



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate	9.1937	8.0000	73.5494	0.3050	1.6104	23.8440	24.1490
2	Main Flanges	24.0720	8.0000	192.5762	271.2790	1.6104	62.4313	333.7103
3	Side Web Plate	5.6808	15.4105	87.5440	75.4436	5.8001	191.1060	266.5496
4	Side Left Flange	7.8864	8.7070	68.6667	0.4029	0.9034	6.4369	6.8398
	Side Right Flange	7.8864	22.1140	174.3993	0.4029	12.5036	1232.9480	1233.3509
5	Top Cover Plate	22.0000	8.0000	176.0000	469.3333	1.6104	57.0575	526.3908
6	Bottom Cover Plate	22.0000	8.0000	176.0000	469.3333	1.6104	57.0575	526.3908
<b>Total</b>		<b>98.72</b>		<b>948.74</b>	<b>1286.50</b>		<b>1630.88</b>	<b>2917.38</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	9.6104	in	S <sub>right</sub> =	226.24	in <sup>3</sup>	x-bar =	9.6104	in	S <sub>right</sub> =	226.24	in <sup>3</sup>
I <sub>y</sub> =	2917.38	in <sup>4</sup>	S <sub>left</sub> =	303.56	in <sup>3</sup>	I <sub>y</sub> =	2917.38	in <sup>4</sup>	S <sub>left</sub> =	303.56	in <sup>3</sup>
C <sub>right</sub> =	12.8951	in	A =	98.7193	in <sup>2</sup>	C <sub>right</sub> =	12.8951	in	A =	98.7193	in <sup>2</sup>
C <sub>left</sub> =	9.6104	in	r <sub>y</sub> =	5.4362	in	C <sub>left</sub> =	9.6104	in	r <sub>y</sub> =	5.4362	in



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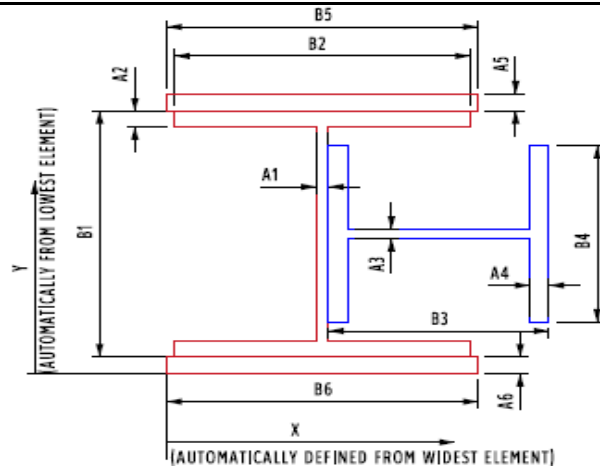
Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	CB16x88	<b>Top Cover Plate</b>	
$A_1 = t_w =$	0.5040 in	$A_5 = t =$	0.6250 in
$B_1 = d =$	16.1600 in	$B_5 = b =$	16.0000 in
$A_2 = t_f =$	0.7950 in	<b>Bottom Cover Plate</b>	
$B_2 = b_f =$	11.5020 in	$A_6 = t =$	0.6250 in
<b>Rolled Side Section*</b>	WF14x48	$B_6 = b =$	16.0000 in
$A_3 = t_w =$	0.3390 in		
$B_3 = d =$	13.8100 in		
$A_4 = t_f =$	0.5930 in		
$B_4 = b_f =$	8.0310 in		



\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web plate	7.3433	8.7050	63.9233	129.9056	0.0000	0.0000	129.9056
2	Main Top Flange	9.1441	16.3875	149.8488	0.4816	7.6825	539.6916	540.1732
	Main Bottom Flange	9.1441	1.0225	9.3498	0.4816	7.6825	539.6916	540.1732
3	Side Web Plate	4.2795	8.7050	37.2534	0.0410	0.0000	0.0000	0.0410
4	Side Flange Plates	9.5248	8.7050	82.9131	51.1932	0.0000	0.0000	51.1932
5	Top Cover Plate	10.0000	17.0975	170.9750	0.3255	8.3925	704.3406	704.6661
6	Bottom Cover Plate	10.0000	0.3125	3.1250	0.3255	8.3925	704.3406	704.6661
<b>Total</b>		<b>59.44</b>		<b>517.39</b>	<b>182.75</b>		<b>2488.06</b>	<b>2670.82</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	8.7050 in	S <sub>top</sub> =	306.81 in <sup>3</sup>	y-bar =	8.7050 in	S <sub>top</sub> =	306.81 in <sup>3</sup>
I <sub>x</sub> =	2670.82 in <sup>4</sup>	S <sub>bottom</sub> =	306.81 in <sup>3</sup>	I <sub>x</sub> =	2670.82 in <sup>4</sup>	S <sub>bottom</sub> =	306.81 in <sup>3</sup>
C <sub>top</sub> =	8.7050 in	A =	59.4358 in <sup>2</sup>	C <sub>top</sub> =	8.7050 in	A =	59.4358 in <sup>2</sup>
C <sub>bottom</sub> =	8.7050 in	r <sub>x</sub> =	6.7034 in	C <sub>bottom</sub> =	8.7050 in	r <sub>x</sub> =	6.7034 in
		J =	8.36 in <sup>4</sup>				



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Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

Y-Axis Section Properties:

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate	7.3433	8.0000	58.7462	0.1554	1.6623	20.2902	20.4456
2	Main Flanges	18.2882	8.0000	146.3054	201.6211	1.6623	50.5319	252.1530
3	Side Web Plate	4.2795	15.1570	64.8649	56.8342	5.4947	129.2087	186.0429
4	Side Left Flange	4.7624	8.5485	40.7112	0.1396	1.1138	5.9075	6.0471
	Side Right Flange	4.7624	21.7655	103.6556	0.1396	12.1032	697.6345	697.7741
5	Top Cover Plate	10.0000	8.0000	80.0000	213.3333	1.6623	27.6309	240.9642
6	Bottom Cover Plate	10.0000	8.0000	80.0000	213.3333	1.6623	27.6309	240.9642
<b>Total</b>		<b>59.44</b>		<b>574.28</b>	<b>685.56</b>		<b>958.83</b>	<b>1644.39</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	9.6623	in	S <sub>right</sub> =	132.61	in <sup>3</sup>	x-bar =	9.6623
I <sub>y</sub> =	1644.39	in <sup>4</sup>	S <sub>left</sub> =	170.19	in <sup>3</sup>	I <sub>y</sub> =	1644.39
C <sub>right</sub> =	12.3997	in	A =	59.4358	in <sup>2</sup>	C <sub>right</sub> =	12.3997
C <sub>left</sub> =	9.6623	in	r <sub>y</sub> =	5.2599	in	C <sub>left</sub> =	9.6623



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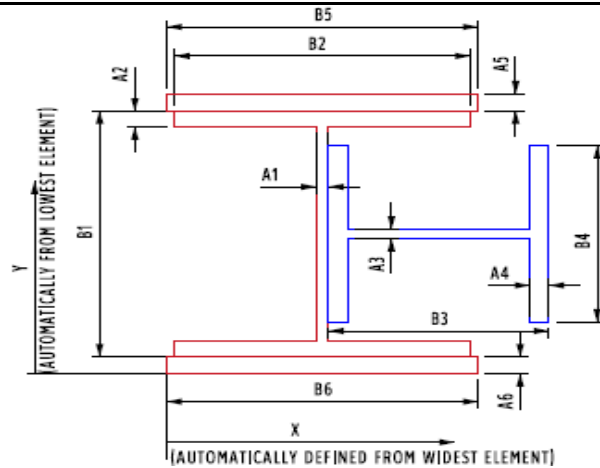
Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	CB16x114	<b>Top Cover Plate</b>
$A_1 = t_w = 0.6310$ in		$A_5 = t = 2.2500$ in
$B_1 = d = 16.6400$ in		$B_5 = b = 16.0000$ in
$A_2 = t_f = 1.0350$ in		<b>Bottom Cover Plate</b>
$B_2 = b_f = 11.6290$ in		$A_6 = t = 2.2500$ in
<b>Rolled Side Section*</b>	WF14x74	$B_6 = b = 16.0000$ in
$A_3 = t_w = 0.4500$ in		
$B_3 = d = 14.1900$ in		
$A_4 = t_f = 0.7830$ in		
$B_4 = b_f = 10.0720$ in		



\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web plate	9.1937	10.5700	97.1771	162.6398	0.0000	0.0000	162.6398
2	Main Top Flange	12.0360	18.3725	221.1317	1.0744	7.8025	732.7406	733.8151
	Main Bottom Flange	12.0360	2.7675	33.3097	1.0744	7.8025	732.7406	733.8151
3	Side Web Plate	5.6808	10.5700	60.0461	0.0959	0.0000	0.0000	0.0959
4	Side Flange Plates	15.7728	10.5700	166.7180	133.3391	0.0000	0.0000	133.3391
5	Top Cover Plate	36.0000	20.0150	720.5400	15.1875	9.4450	3211.4889	3226.6764
6	Bottom Cover Plate	36.0000	1.1250	40.5000	15.1875	9.4450	3211.4889	3226.6764
<b>Total</b>		<b>126.72</b>		<b>1339.42</b>	<b>328.60</b>		<b>7888.46</b>	<b>8217.06</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	10.5700 in	S <sub>top</sub> =	777.39 in <sup>3</sup>	y-bar =	10.5700 in	S <sub>top</sub> =	777.39 in <sup>3</sup>
I <sub>x</sub> =	8217.06 in <sup>4</sup>	S <sub>bottom</sub> =	777.39 in <sup>3</sup>	I <sub>x</sub> =	8217.06 in <sup>4</sup>	S <sub>bottom</sub> =	777.39 in <sup>3</sup>
C <sub>top</sub> =	10.5700 in	A =	126.7193 in <sup>2</sup>	C <sub>top</sub> =	10.5700 in	A =	126.7193 in <sup>2</sup>
C <sub>bottom</sub> =	10.5700 in	r <sub>x</sub> =	8.0526 in	C <sub>bottom</sub> =	10.5700 in	r <sub>x</sub> =	8.0526 in
		J =	134.92 in <sup>4</sup>				



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Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

Y-Axis Section Properties:

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate	9.1937	8.0000	73.5494	0.3050	1.2546	14.4710	14.7760
2	Main Flanges	24.0720	8.0000	192.5762	271.2790	1.2546	37.8897	309.1687
3	Side Web Plate	5.6808	15.4105	87.5440	75.4436	6.1559	215.2747	290.7183
4	Side Left Flange	7.8864	8.7070	68.6667	0.4029	0.5476	2.3648	2.7677
	Side Right Flange	7.8864	22.1140	174.3993	0.4029	12.8594	1304.1247	1304.5276
5	Top Cover Plate	36.0000	8.0000	288.0000	768.0000	1.2546	56.6645	824.6645
6	Bottom Cover Plate	36.0000	8.0000	288.0000	768.0000	1.2546	56.6645	824.6645
<b>Total</b>		<b>126.72</b>		<b>1172.74</b>	<b>1883.83</b>		<b>1687.45</b>	<b>3571.29</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	9.2546	in	S <sub>right</sub> =	269.51	in <sup>3</sup>	x-bar =	9.2546	in	S <sub>right</sub> =	269.51	in <sup>3</sup>
I <sub>y</sub> =	3571.29	in <sup>4</sup>	S <sub>left</sub> =	385.89	in <sup>3</sup>	I <sub>y</sub> =	3571.29	in <sup>4</sup>	S <sub>left</sub> =	385.89	in <sup>3</sup>
C <sub>right</sub> =	13.2509	in	A =	126.7193	in <sup>2</sup>	C <sub>right</sub> =	13.2509	in	A =	126.7193	in <sup>2</sup>
C <sub>left</sub> =	9.2546	in	r <sub>y</sub> =	5.3087	in	C <sub>left</sub> =	9.2546	in	r <sub>y</sub> =	5.3087	in





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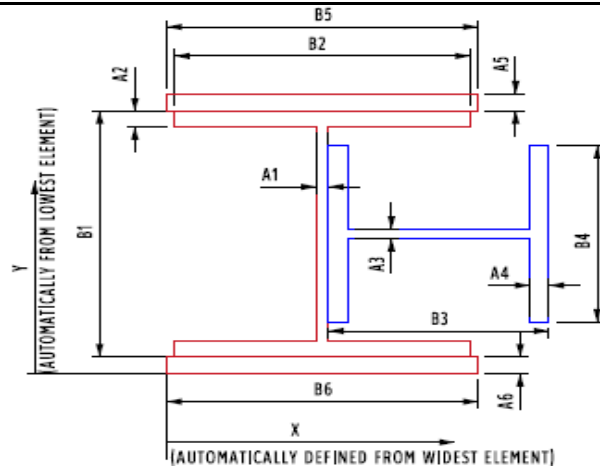
Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	CB16x114	<b>Top Cover Plate</b>
$A_1 = t_w = 0.6310$ in		$A_5 = t = 1.5000$ in
$B_1 = d = 16.6400$ in		$B_5 = b = 16.0000$ in
$A_2 = t_f = 1.0350$ in		<b>Bottom Cover Plate</b>
$B_2 = b_f = 11.6290$ in		$A_6 = t = 1.5000$ in
<b>Rolled Side Section*</b>	WF14x74	$B_6 = b = 16.0000$ in
$A_3 = t_w = 0.4500$ in		
$B_3 = d = 14.1900$ in		
$A_4 = t_f = 0.7830$ in		
$B_4 = b_f = 10.0720$ in		



\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web plate	9.1937	9.8200	90.2818	162.6398	0.0000	0.0000	162.6398
2	Main Top Flange	12.0360	17.6225	212.1047	1.0744	7.8025	732.7406	733.8151
	Main Bottom Flange	12.0360	2.0175	24.2827	1.0744	7.8025	732.7406	733.8151
3	Side Web Plate	5.6808	9.8200	55.7855	0.0959	0.0000	0.0000	0.0959
4	Side Flange Plates	15.7728	9.8200	154.8884	133.3391	0.0000	0.0000	133.3391
5	Top Cover Plate	24.0000	18.8900	453.3600	4.5000	9.0700	1974.3576	1978.8576
6	Bottom Cover Plate	24.0000	0.7500	18.0000	4.5000	9.0700	1974.3576	1978.8576
<b>Total</b>		<b>102.72</b>		<b>1008.70</b>	<b>307.22</b>		<b>5414.20</b>	<b>5721.42</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

**Bent 23 South Column**  
**Lower Part with 1 Cover Plate**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	9.8200 in	$S_{top} =$	582.63 in <sup>3</sup>	y-bar =	9.8200 in	$S_{top} =$	582.63 in <sup>3</sup>
$I_x =$	5721.42 in <sup>4</sup>	$S_{bott.} =$	582.63 in <sup>3</sup>	$I_x =$	5721.42 in <sup>4</sup>	$S_{bott.} =$	582.63 in <sup>3</sup>
$C_{top} =$	9.8200 in	A =	102.7193 in <sup>2</sup>	$C_{top} =$	9.8200 in	A =	102.7193 in <sup>2</sup>
$C_{bottom} =$	9.8200 in	$r_x =$	7.4632 in	$C_{bottom} =$	9.8200 in	$r_x =$	7.4632 in
		J =	49.42 in <sup>4</sup>				



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate	9.1937	8.0000	73.5494	0.3050	1.5477	22.0231	22.3282
2	Main Flanges	24.0720	8.0000	192.5762	271.2790	1.5477	57.6637	328.9427
3	Side Web Plate	5.6808	15.4105	87.5440	75.4436	5.8628	195.2609	270.7045
4	Side Left Flange	7.8864	8.7070	68.6667	0.4029	0.8407	5.5743	5.9772
	Side Right Flange	7.8864	22.1140	174.3993	0.4029	12.5663	1245.3469	1245.7498
5	Top Cover Plate	24.0000	8.0000	192.0000	512.0000	1.5477	57.4911	569.4911
6	Bottom Cover Plate	24.0000	8.0000	192.0000	512.0000	1.5477	57.4911	569.4911
<b>Total</b>		<b>102.72</b>		<b>980.74</b>	<b>1371.83</b>		<b>1640.85</b>	<b>3012.68</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	9.5477 in	S <sub>right</sub> =	232.50 in <sup>3</sup>	x-bar =	9.5477 in	S <sub>right</sub> =	232.50 in <sup>3</sup>
I <sub>y</sub> =	3012.68 in <sup>4</sup>	S <sub>left</sub> =	315.54 in <sup>3</sup>	I <sub>y</sub> =	3012.68 in <sup>4</sup>	S <sub>left</sub> =	315.54 in <sup>3</sup>
C <sub>right</sub> =	12.9578 in	A =	102.7193 in <sup>2</sup>	C <sub>right</sub> =	12.9578 in	A =	102.7193 in <sup>2</sup>
C <sub>left</sub> =	9.5477 in	r <sub>y</sub> =	5.4157 in	C <sub>left</sub> =	9.5477 in	r <sub>y</sub> =	5.4157 in



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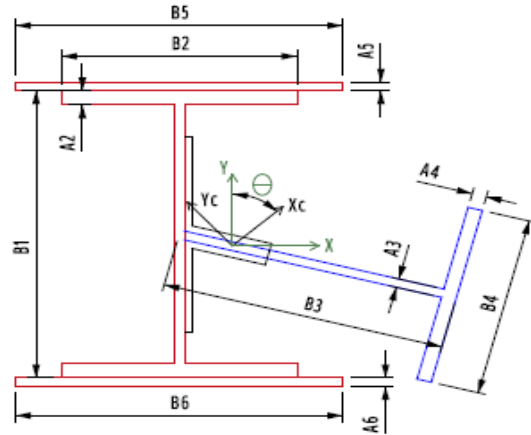
Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	CB16x88	<b>Top Cover Plate</b>
$A_1 = t_w =$	0.5040 in	$A_5 = t =$ 0.5000 in
$B_1 = d =$	16.1600 in	$B_5 = b =$ 16.0000 in
$A_2 = t_f =$	0.7950 in	<b>Bottom Cover Plate</b>
$B_2 = b_f =$	11.5020 in	$A_6 = t =$ 0.5000 in
<b>Rolled Side Section*</b>	WF27x91	$B_6 = b =$ 16.0000 in
$A_3 = t_w =$	0.4830 in	
$B_3 = d =$	14.0000 in	
$A_4 = t_f =$	0.7120 in	
$B_4 = b_f =$	9.9830 in	



**Bent 24 North & South Column**

\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**Properties From Microstation about Section's Centroid:**

Area = 61.8591 in<sup>2</sup>  
 $I_{xc} = 2504.1100$  in<sup>4</sup>  
 $I_{yc} = 1828.3800$  in<sup>4</sup>  
 Product of Inertia -316.9040 in<sup>4</sup>

**Enter width's and thickness of bent plates for J calculation**

b (in)	t (in)
4.5000	0.3750
5.5000	0.3750
4.5000	0.3750
5.5000	0.3750

Enter CCW angle between pairs of axes

$\theta = 68.4167^\circ$

When rotated CCW does the centroidal x axis become the global x axis?

Enter "yes" or "no": no

Enter c values for section modulus calculation

$c_x = 8.0000$  in  
 $c_y = 8.5800$  in

As-Built Section Properties		
A =	61.86	in <sup>2</sup>
$I_x =$	2629.47	in <sup>4</sup>
$I_y =$	1703.02	in <sup>4</sup>
$S_x =$	328.68	in <sup>3</sup>
$S_y =$	198.49	in <sup>3</sup>
$r_x =$	6.52	in
$r_y =$	5.25	in
J =	7.85	in <sup>4</sup>



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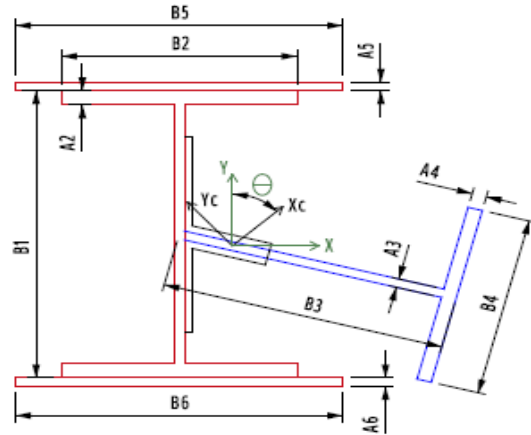
Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	CB16x88	<b>Top Cover Plate</b>
$A_1 = t_w =$	0.5040 in	$A_5 = t =$ 0.5000 in
$B_1 = d =$	16.1600 in	$B_5 = b =$ 16.0000 in
$A_2 = t_f =$	0.7950 in	<b>Bottom Cover Plate</b>
$B_2 = b_f =$	11.5020 in	$A_6 = t =$ 0.5000 in
<b>Rolled Side Section*</b>	WF27x91	$B_6 = b =$ 16.0000 in
$A_3 = t_w =$	0.4830 in	
$B_3 = d =$	14.0000 in	
$A_4 = t_f =$	0.7120 in	
$B_4 = b_f =$	9.9830 in	



**Bent 25 North & South Column**

\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**Properties From Microstation about Section's Centroid:**

Area =	61.8591 in <sup>2</sup>
$I_{xc} =$	2504.1100 in <sup>4</sup>
$I_{yc} =$	1828.3800 in <sup>4</sup>
Product of Inertia	-316.9040 in <sup>4</sup>

**Enter width's and thickness of bent plates for J calculation**

b (in)	t (in)
4.5000	0.3750
5.5000	0.3750
4.5000	0.3750
5.5000	0.3750

Enter CCW angle between pairs of axes

$\theta =$  68.4167 °

When rotated CCW does the centroidal x axis become the global x axis?

Enter "yes" or "no": no

Enter c values for section modulus calculation

$c_x =$  8.0000 in  
 $c_y =$  8.5800 in

As-Built Section Properties		
A =	61.86	in <sup>2</sup>
$I_x =$	2629.47	in <sup>4</sup>
$I_y =$	1703.02	in <sup>4</sup>
$S_x =$	328.68	in <sup>3</sup>
$S_y =$	198.49	in <sup>3</sup>
$r_x =$	6.52	in
$r_y =$	5.25	in
J =	7.85	in <sup>4</sup>



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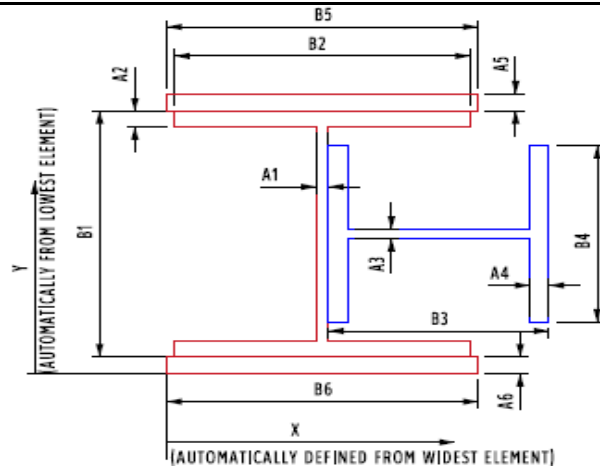
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Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	CB16x114	<b>Top Cover Plate</b>
$A_1 = t_w = 0.6310$ in		$A_5 = t = 1.6250$ in
$B_1 = d = 16.6400$ in		$B_5 = b = 16.0000$ in
$A_2 = t_f = 1.0350$ in		<b>Bottom Cover Plate</b>
$B_2 = b_f = 11.6290$ in		$A_6 = t = 1.6250$ in
<b>Rolled Side Section*</b>	WF14x61	$B_6 = b = 16.0000$ in
$A_3 = t_w = 0.3780$ in		
$B_3 = d = 13.9100$ in		
$A_4 = t_f = 0.6430$ in		
$B_4 = b_f = 10.0000$ in		



**Bent 26 North & South Column**  
**Upper Part with 2 Cover Plates**

\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web plate	9.1937	9.9450	91.4310	162.6398	0.0000	0.0000	162.6398
2	Main Top Flange	12.0360	17.7475	213.6092	1.0744	7.8025	732.7406	733.8151
	Main Bottom Flange	12.0360	2.1425	25.7872	1.0744	7.8025	732.7406	733.8151
3	Side Web Plate	4.7719	9.9450	47.4563	0.0568	0.0000	0.0000	0.0568
4	Side Flange Plates	12.8600	9.9450	127.8927	107.1667	0.0000	0.0000	107.1667
5	Top Cover Plate	26.0000	19.0775	496.0150	5.7214	9.1325	2168.4665	2174.1878
6	Bottom Cover Plate	26.0000	0.8125	21.1250	5.7214	9.1325	2168.4665	2174.1878
<b>Total</b>		<b>102.90</b>		<b>1023.32</b>	<b>283.45</b>		<b>5802.41</b>	<b>6085.87</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	9.9450	in	S <sub>top</sub> = 611.95 in <sup>3</sup>	y-bar =	9.9450	in	S <sub>top</sub> = 611.95 in <sup>3</sup>
I <sub>x</sub> =	6085.87	in <sup>4</sup>	S <sub>bottom</sub> = 611.95 in <sup>3</sup>	I <sub>x</sub> =	6085.87	in <sup>4</sup>	S <sub>bottom</sub> = 611.95 in <sup>3</sup>
C <sub>top</sub> =	9.9450	in	A = 102.8976 in <sup>2</sup>	C <sub>top</sub> =	9.9450	in	A = 102.8976 in <sup>2</sup>
C <sub>bottom</sub> =	9.9450	in	r <sub>x</sub> = 7.6906 in	C <sub>bottom</sub> =	9.9450	in	r <sub>x</sub> = 7.6906 in
			J = 57.59 in <sup>4</sup>				



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate	9.1937	8.0000	73.5494	0.3050	1.2458	14.2693	14.5744
2	Main Flanges	24.0720	8.0000	192.5762	271.2790	1.2458	37.3618	308.6408
3	Side Web Plate	4.7719	15.2705	72.8689	63.3726	6.0247	173.2032	236.5758
4	Side Left Flange	6.4300	8.6370	55.5359	0.2215	0.6088	2.3834	2.6049
	Side Right Flange	6.4300	21.9040	140.8427	0.2215	12.6582	1030.2748	1030.4963
5	Top Cover Plate	26.0000	8.0000	208.0000	554.6667	1.2458	40.3542	595.0208
6	Bottom Cover Plate	26.0000	8.0000	208.0000	554.6667	1.2458	40.3542	595.0208
<b>Total</b>		<b>102.90</b>		<b>951.37</b>	<b>1444.73</b>		<b>1338.20</b>	<b>2782.93</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	9.2458 in	S <sub>right</sub> =	214.41 in <sup>3</sup>	x-bar =	9.2458 in	S <sub>right</sub> =	214.41 in <sup>3</sup>
I <sub>y</sub> =	2782.93 in <sup>4</sup>	S <sub>left</sub> =	300.99 in <sup>3</sup>	I <sub>y</sub> =	2782.93 in <sup>4</sup>	S <sub>left</sub> =	300.99 in <sup>3</sup>
C <sub>right</sub> =	12.9797 in	A =	102.8976 in <sup>2</sup>	C <sub>right</sub> =	12.9797 in	A =	102.8976 in <sup>2</sup>
C <sub>left</sub> =	9.2458 in	r <sub>y</sub> =	5.2005 in	C <sub>left</sub> =	9.2458 in	r <sub>y</sub> =	5.2005 in



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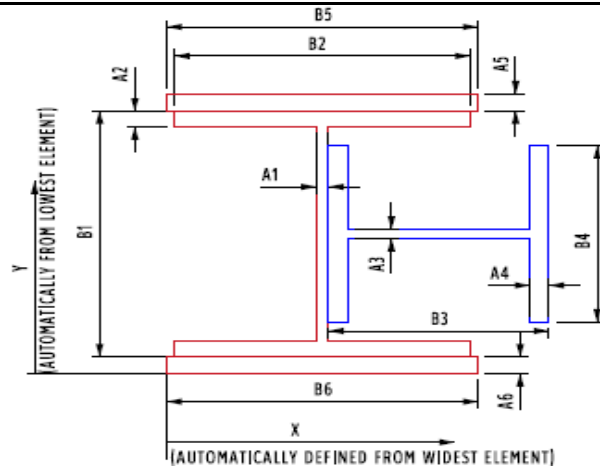
Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	CB16x114	<b>Top Cover Plate</b>
$A_1 = t_w = 0.6310$ in		$A_5 = t = 0.8750$ in
$B_1 = d = 16.6400$ in		$B_5 = b = 16.0000$ in
$A_2 = t_f = 1.0350$ in		<b>Bottom Cover Plate</b>
$B_2 = b_f = 11.6290$ in		$A_6 = t = 0.8750$ in
<b>Rolled Side Section*</b>	WF14x61	$B_6 = b = 16.0000$ in
$A_3 = t_w = 0.3780$ in		
$B_3 = d = 13.9100$ in		
$A_4 = t_f = 0.6430$ in		
$B_4 = b_f = 10.0000$ in		



**Bent 26 North & South Column**  
**Lower Part with 1 Cover Plate**

\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web plate	9.1937	9.1950	84.5358	162.6398	0.0000	0.0000	162.6398
2	Main Top Flange	12.0360	16.9975	204.5822	1.0744	7.8025	732.7406	733.8151
	Main Bottom Flange	12.0360	1.3925	16.7602	1.0744	7.8025	732.7406	733.8151
3	Side Web Plate	4.7719	9.1950	43.8774	0.0568	0.0000	0.0000	0.0568
4	Side Flange Plates	12.8600	9.1950	118.2477	107.1667	0.0000	0.0000	107.1667
5	Top Cover Plate	14.0000	17.9525	251.3350	0.8932	8.7575	1073.7133	1074.6065
6	Bottom Cover Plate	14.0000	0.4375	6.1250	0.8932	8.7575	1073.7133	1074.6065
<b>Total</b>		<b>78.90</b>		<b>725.46</b>	<b>273.80</b>		<b>3612.91</b>	<b>3886.71</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	9.1950	in	$S_{top} = 422.70$ in <sup>3</sup>	y-bar =	9.1950	in	$S_{top} = 422.70$ in <sup>3</sup>
$I_x =$	3886.71	in <sup>4</sup>	$S_{bott.} = 422.70$ in <sup>3</sup>	$I_x =$	3886.71	in <sup>4</sup>	$S_{bott.} = 422.70$ in <sup>3</sup>
$C_{top} =$	9.1950	in	$A = 78.8976$ in <sup>2</sup>	$C_{top} =$	9.1950	in	$A = 78.8976$ in <sup>2</sup>
$C_{bottom} =$	9.1950	in	$r_x = 7.0187$ in	$C_{bottom} =$	9.1950	in	$r_x = 7.0187$ in
			$J = 18.96$ in <sup>4</sup>				



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Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate	9.1937	8.0000	73.5494	0.3050	1.6248	24.2710	24.5760
2	Main Flanges	24.0720	8.0000	192.5762	271.2790	1.6248	63.5493	334.8283
3	Side Web Plate	4.7719	15.2705	72.8689	63.3726	5.6457	152.0985	215.4711
4	Side Left Flange	6.4300	8.6370	55.5359	0.2215	0.9878	6.2740	6.4956
	Side Right Flange	6.4300	21.9040	140.8427	0.2215	12.2792	969.5079	969.7294
5	Top Cover Plate	14.0000	8.0000	112.0000	298.6667	1.6248	36.9595	335.6262
6	Bottom Cover Plate	14.0000	8.0000	112.0000	298.6667	1.6248	36.9595	335.6262
<b>Total</b>		<b>78.90</b>		<b>759.37</b>	<b>932.73</b>		<b>1289.62</b>	<b>2222.35</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	9.6248	in	S <sub>right</sub> =	176.37	in <sup>3</sup>	x-bar =	9.6248	in	S <sub>right</sub> =	176.37	in <sup>3</sup>
I <sub>y</sub> =	2222.35	in <sup>4</sup>	S <sub>left</sub> =	230.90	in <sup>3</sup>	I <sub>y</sub> =	2222.35	in <sup>4</sup>	S <sub>left</sub> =	230.90	in <sup>3</sup>
C <sub>right</sub> =	12.6007	in	A =	78.8976	in <sup>2</sup>	C <sub>right</sub> =	12.6007	in	A =	78.8976	in <sup>2</sup>
C <sub>left</sub> =	9.6248	in	r <sub>y</sub> =	5.3073	in	C <sub>left</sub> =	9.6248	in	r <sub>y</sub> =	5.3073	in





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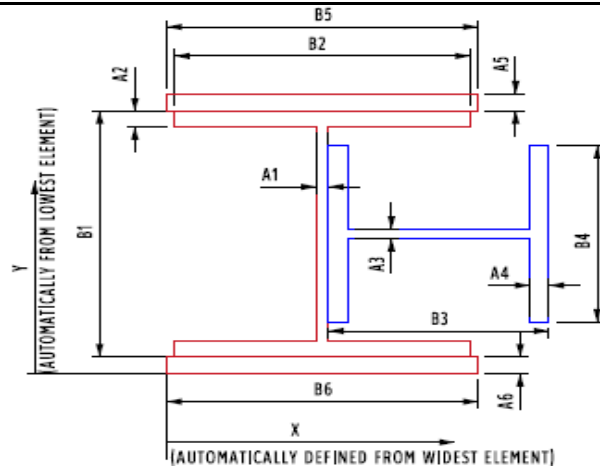
Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	CB16x114	<b>Top Cover Plate</b>
$A_1 = t_w = 0.6310$	in	$A_5 = t = 1.0000$
$B_1 = d = 16.6400$	in	$B_5 = b = 16.0000$
$A_2 = t_f = 1.0350$	in	<b>Bottom Cover Plate</b>
$B_2 = b_f = 11.6290$	in	$A_6 = t = 1.0000$
<b>Rolled Side Section*</b>	WF14x61	$B_6 = b = 16.0000$
$A_3 = t_w = 0.3780$	in	
$B_3 = d = 13.9100$	in	
$A_4 = t_f = 0.6430$	in	
$B_4 = b_f = 10.0000$	in	



\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web plate	9.1937	9.3200	85.6850	162.6398	0.0000	0.0000	162.6398
2	Main Top Flange	12.0360	17.1225	206.0867	1.0744	7.8025	732.7406	733.8151
	Main Bottom Flange	12.0360	1.5175	18.2647	1.0744	7.8025	732.7406	733.8151
3	Side Web Plate	4.7719	9.3200	44.4738	0.0568	0.0000	0.0000	0.0568
4	Side Flange Plates	12.8600	9.3200	119.8552	107.1667	0.0000	0.0000	107.1667
5	Top Cover Plate	16.0000	18.1400	290.2400	1.3333	8.8200	1244.6784	1246.0117
6	Bottom Cover Plate	16.0000	0.5000	8.0000	1.3333	8.8200	1244.6784	1246.0117
<b>Total</b>		<b>82.90</b>		<b>772.61</b>	<b>274.68</b>		<b>3954.84</b>	<b>4229.52</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	9.3200	in	$S_{top} = 453.81$	in <sup>3</sup>	y-bar =	9.3200	in	$S_{top} = 453.81$	in <sup>3</sup>		
$I_x =$	4229.52	in <sup>4</sup>	$S_{bott.} = 453.81$	in <sup>3</sup>	$I_x =$	4229.52	in <sup>4</sup>	$S_{bott.} = 453.81$	in <sup>3</sup>		
$C_{top} =$	9.3200	in	A =	82.8976	in <sup>2</sup>	$C_{top} =$	9.3200	in	A =	82.8976	in <sup>2</sup>
$C_{bottom} =$	9.3200	in	$r_x =$	7.1429	in	$C_{bottom} =$	9.3200	in	$r_x =$	7.1429	in
			J =	22.48	in <sup>4</sup>						



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

Y-Axis Section Properties:

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate	9.1937	8.0000	73.5494	0.3050	1.5464	21.9852	22.2903
2	Main Flanges	24.0720	8.0000	192.5762	271.2790	1.5464	57.5645	328.8435
3	Side Web Plate	4.7719	15.2705	72.8689	63.3726	5.7241	156.3521	219.7247
4	Side Left Flange	6.4300	8.6370	55.5359	0.2215	0.9094	5.3176	5.5392
	Side Right Flange	6.4300	21.9040	140.8427	0.2215	12.3576	981.9276	982.1492
5	Top Cover Plate	16.0000	8.0000	128.0000	341.3333	1.5464	38.2615	379.5948
6	Bottom Cover Plate	16.0000	8.0000	128.0000	341.3333	1.5464	38.2615	379.5948
<b>Total</b>		<b>82.90</b>		<b>791.37</b>	<b>1018.07</b>		<b>1299.67</b>	<b>2317.74</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	9.5464	in	S <sub>right</sub> =	182.80	in <sup>3</sup>	x-bar =	9.5464	in	S <sub>right</sub> =	182.80	in <sup>3</sup>
I <sub>y</sub> =	2317.74	in <sup>4</sup>	S <sub>left</sub> =	242.79	in <sup>3</sup>	I <sub>y</sub> =	2317.74	in <sup>4</sup>	S <sub>left</sub> =	242.79	in <sup>3</sup>
C <sub>right</sub> =	12.6791	in	A =	82.8976	in <sup>2</sup>	C <sub>right</sub> =	12.6791	in	A =	82.8976	in <sup>2</sup>
C <sub>left</sub> =	9.5464	in	r <sub>y</sub> =	5.2876	in	C <sub>left</sub> =	9.5464	in	r <sub>y</sub> =	5.2876	in



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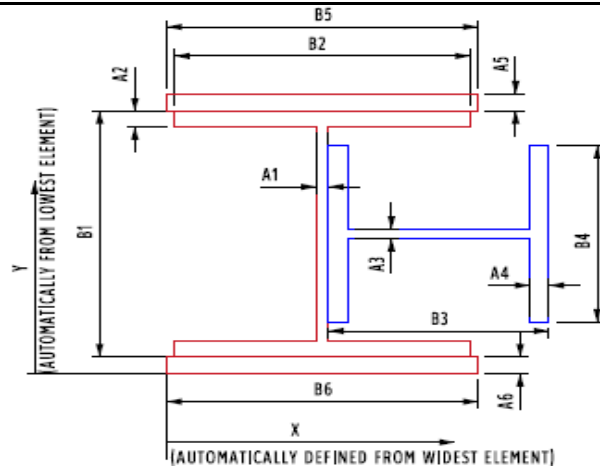
Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	CB16x114	<b>Top Cover Plate</b>
$A_1 = t_w = 0.6310$ in		$A_5 = t = 0.6250$ in
$B_1 = d = 16.6400$ in		$B_5 = b = 16.0000$ in
$A_2 = t_f = 1.0350$ in		<b>Bottom Cover Plate</b>
$B_2 = b_f = 11.6290$ in		$A_6 = t = 0.6250$ in
<b>Rolled Side Section*</b>	WF14x61	$B_6 = b = 16.0000$ in
$A_3 = t_w = 0.3780$ in		
$B_3 = d = 13.9100$ in		
$A_4 = t_f = 0.6430$ in		
$B_4 = b_f = 10.0000$ in		



\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web plate	9.1937	8.9450	82.2374	162.6398	0.0000	0.0000	162.6398
2	Main Top Flange	12.0360	16.7475	201.5732	1.0744	7.8025	732.7406	733.8151
	Main Bottom Flange	12.0360	1.1425	13.7511	1.0744	7.8025	732.7406	733.8151
3	Side Web Plate	4.7719	8.9450	42.6844	0.0568	0.0000	0.0000	0.0568
4	Side Flange Plates	12.8600	8.9450	115.0327	107.1667	0.0000	0.0000	107.1667
5	Top Cover Plate	10.0000	17.5775	175.7750	0.3255	8.6325	745.2006	745.5261
6	Bottom Cover Plate	10.0000	0.3125	3.1250	0.3255	8.6325	745.2006	745.5261
<b>Total</b>		<b>70.90</b>		<b>634.18</b>	<b>272.66</b>		<b>2955.88</b>	<b>3228.55</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

**Bent 27 North & South Column**  
**Lower Part with 1 Cover Plate**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	8.9450	in	$S_{top} = 360.93$ in <sup>3</sup>	y-bar =	8.9450	in	$S_{top} = 360.93$ in <sup>3</sup>
$I_x =$	3228.55	in <sup>4</sup>	$S_{bott.} = 360.93$ in <sup>3</sup>	$I_x =$	3228.55	in <sup>4</sup>	$S_{bott.} = 360.93$ in <sup>3</sup>
$C_{top} =$	8.9450	in	$A = 70.8976$ in <sup>2</sup>	$C_{top} =$	8.9450	in	$A = 70.8976$ in <sup>2</sup>
$C_{bottom} =$	8.9450	in	$r_x = 6.7482$ in	$C_{bottom} =$	8.9450	in	$r_x = 6.7482$ in
			$J = 14.42$ in <sup>4</sup>				



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate	9.1937	8.0000	73.5494	0.3050	1.8081	30.0574	30.3625
2	Main Flanges	24.0720	8.0000	192.5762	271.2790	1.8081	78.7001	349.9791
3	Side Web Plate	4.7719	15.2705	72.8689	63.3726	5.4624	142.3803	205.7529
4	Side Left Flange	6.4300	8.6370	55.5359	0.2215	1.1711	8.8191	9.0407
	Side Right Flange	6.4300	21.9040	140.8427	0.2215	12.0959	940.7727	940.9942
5	Top Cover Plate	10.0000	8.0000	80.0000	213.3333	1.8081	32.6936	246.0269
6	Bottom Cover Plate	10.0000	8.0000	80.0000	213.3333	1.8081	32.6936	246.0269
<b>Total</b>		<b>70.90</b>		<b>695.37</b>	<b>762.07</b>		<b>1266.12</b>	<b>2028.18</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	9.8081	in	S <sub>right</sub> =	163.33	in <sup>3</sup>	x-bar =	9.8081	in	S <sub>right</sub> =	163.33	in <sup>3</sup>
I <sub>y</sub> =	2028.18	in <sup>4</sup>	S <sub>left</sub> =	206.79	in <sup>3</sup>	I <sub>y</sub> =	2028.18	in <sup>4</sup>	S <sub>left</sub> =	206.79	in <sup>3</sup>
C <sub>right</sub> =	12.4174	in	A =	70.8976	in <sup>2</sup>	C <sub>right</sub> =	12.4174	in	A =	70.8976	in <sup>2</sup>
C <sub>left</sub> =	9.8081	in	r <sub>y</sub> =	5.3486	in	C <sub>left</sub> =	9.8081	in	r <sub>y</sub> =	5.3486	in



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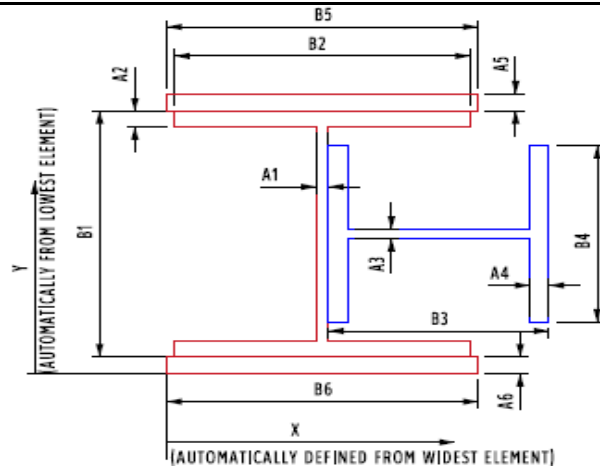
Date 3/12/2012  
 Date 3/22/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	CB16x114	<b>Top Cover Plate</b>	
$A_1 = t_w =$	0.6310 in	$A_5 = t =$	1.0000 in
$B_1 = d =$	16.6400 in	$B_5 = b =$	16.0000 in
$A_2 = t_f =$	1.0350 in	<b>Bottom Cover Plate</b>	
$B_2 = b_f =$	11.6290 in	$A_6 = t =$	1.0000 in
<b>Rolled Side Section*</b>	WF14x61	$B_6 = b =$	16.0000 in
$A_3 = t_w =$	0.3780 in		
$B_3 = d =$	13.9100 in		
$A_4 = t_f =$	0.6430 in		
$B_4 = b_f =$	10.0000 in		



\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web plate	9.1937	9.3200	85.6850	162.6398	0.0000	0.0000	162.6398
2	Main Top Flange	12.0360	17.1225	206.0867	1.0744	7.8025	732.7406	733.8151
	Main Bottom Flange	12.0360	1.5175	18.2647	1.0744	7.8025	732.7406	733.8151
3	Side Web Plate	4.7719	9.3200	44.4738	0.0568	0.0000	0.0000	0.0568
4	Side Flange Plates	12.8600	9.3200	119.8552	107.1667	0.0000	0.0000	107.1667
5	Top Cover Plate	16.0000	18.1400	290.2400	1.3333	8.8200	1244.6784	1246.0117
6	Bottom Cover Plate	16.0000	0.5000	8.0000	1.3333	8.8200	1244.6784	1246.0117
<b>Total</b>		<b>82.90</b>		<b>772.61</b>	<b>274.68</b>		<b>3954.84</b>	<b>4229.52</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	9.3200 in	$S_{top} =$	453.81 in <sup>3</sup>	y-bar =	9.3200 in	$S_{top} =$	453.81 in <sup>3</sup>
$I_x =$	4229.52 in <sup>4</sup>	$S_{bott.} =$	453.81 in <sup>3</sup>	$I_x =$	4229.52 in <sup>4</sup>	$S_{bott.} =$	453.81 in <sup>3</sup>
$C_{top} =$	9.3200 in	A =	82.8976 in <sup>2</sup>	$C_{top} =$	9.3200 in	A =	82.8976 in <sup>2</sup>
$C_{bottom} =$	9.3200 in	$r_x =$	7.1429 in	$C_{bottom} =$	9.3200 in	$r_x =$	7.1429 in
		J =	22.48 in <sup>4</sup>				



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Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

Y-Axis Section Properties:

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate		9.1937	8.0000	73.5494	0.3050	1.5464	21.9852	22.2903
2	Main Flanges		24.0720	8.0000	192.5762	271.2790	1.5464	57.5645	328.8435
3	Side Web Plate		4.7719	15.2705	72.8689	63.3726	5.7241	156.3521	219.7247
4	Side Left Flange		6.4300	8.6370	55.5359	0.2215	0.9094	5.3176	5.5392
	Side Right Flange		6.4300	21.9040	140.8427	0.2215	12.3576	981.9276	982.1492
5	Top Cover Plate		16.0000	8.0000	128.0000	341.3333	1.5464	38.2615	379.5948
6	Bottom Cover Plate		16.0000	8.0000	128.0000	341.3333	1.5464	38.2615	379.5948
<b>Total</b>			<b>82.90</b>		<b>791.37</b>	<b>1018.07</b>		<b>1299.67</b>	<b>2317.74</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	9.5464	in	S <sub>right</sub> =	182.80	in <sup>3</sup>	x-bar =	9.5464	in	S <sub>right</sub> =	182.80	in <sup>3</sup>
I <sub>y</sub> =	2317.74	in <sup>4</sup>	S <sub>left</sub> =	242.79	in <sup>3</sup>	I <sub>y</sub> =	2317.74	in <sup>4</sup>	S <sub>left</sub> =	242.79	in <sup>3</sup>
C <sub>right</sub> =	12.6791	in	A =	82.8976	in <sup>2</sup>	C <sub>right</sub> =	12.6791	in	A =	82.8976	in <sup>2</sup>
C <sub>left</sub> =	9.5464	in	r <sub>y</sub> =	5.2876	in	C <sub>left</sub> =	9.5464	in	r <sub>y</sub> =	5.2876	in



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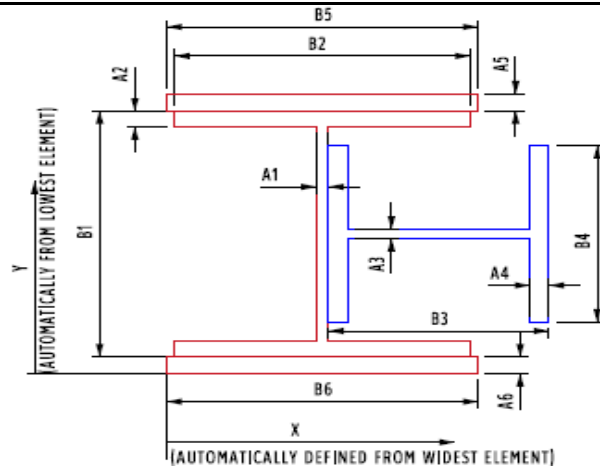
Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	CB16x114	<b>Top Cover Plate</b>	
$A_1 = t_w = 0.6310$	in	$A_5 = t = 0.6250$	in
$B_1 = d = 16.6400$	in	$B_5 = b = 16.0000$	in
$A_2 = t_f = 1.0350$	in	<b>Bottom Cover Plate</b>	
$B_2 = b_f = 11.6290$	in	$A_6 = t = 0.6250$	in
<b>Rolled Side Section*</b>	WF14x61	$B_6 = b = 16.0000$	in
$A_3 = t_w = 0.3780$	in		
$B_3 = d = 13.9100$	in		
$A_4 = t_f = 0.6430$	in		
$B_4 = b_f = 10.0000$	in		



**Bent 28 North & South Column  
Lower Part with 1 Cover Plate**

\*Select sections from dropdown list  
Side beam is assumed centered on main beam's web

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web plate	9.1937	8.9450	82.2374	162.6398	0.0000	0.0000	162.6398
2	Main Top Flange	12.0360	16.7475	201.5732	1.0744	7.8025	732.7406	733.8151
	Main Bottom Flange	12.0360	1.1425	13.7511	1.0744	7.8025	732.7406	733.8151
3	Side Web Plate	4.7719	8.9450	42.6844	0.0568	0.0000	0.0000	0.0568
4	Side Flange Plates	12.8600	8.9450	115.0327	107.1667	0.0000	0.0000	107.1667
5	Top Cover Plate	10.0000	17.5775	175.7750	0.3255	8.6325	745.2006	745.5261
6	Bottom Cover Plate	10.0000	0.3125	3.1250	0.3255	8.6325	745.2006	745.5261
<b>Total</b>		<b>70.90</b>		<b>634.18</b>	<b>272.66</b>		<b>2955.88</b>	<b>3228.55</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	8.9450	in	S <sub>top</sub> = 360.93 in <sup>3</sup>	y-bar =	8.9450	in	S <sub>top</sub> = 360.93 in <sup>3</sup>
I <sub>x</sub> =	3228.55	in <sup>4</sup>	S <sub>bottom</sub> = 360.93 in <sup>3</sup>	I <sub>x</sub> =	3228.55	in <sup>4</sup>	S <sub>bottom</sub> = 360.93 in <sup>3</sup>
C <sub>top</sub> =	8.9450	in	A = 70.8976 in <sup>2</sup>	C <sub>top</sub> =	8.9450	in	A = 70.8976 in <sup>2</sup>
C <sub>bottom</sub> =	8.9450	in	r <sub>x</sub> = 6.7482 in	C <sub>bottom</sub> =	8.9450	in	r <sub>x</sub> = 6.7482 in
			J = 14.42 in <sup>4</sup>				



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Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

Y-Axis Section Properties:

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate	9.1937	8.0000	73.5494	0.3050	1.8081	30.0574	30.3625
2	Main Flanges	24.0720	8.0000	192.5762	271.2790	1.8081	78.7001	349.9791
3	Side Web Plate	4.7719	15.2705	72.8689	63.3726	5.4624	142.3803	205.7529
4	Side Left Flange	6.4300	8.6370	55.5359	0.2215	1.1711	8.8191	9.0407
	Side Right Flange	6.4300	21.9040	140.8427	0.2215	12.0959	940.7727	940.9942
5	Top Cover Plate	10.0000	8.0000	80.0000	213.3333	1.8081	32.6936	246.0269
6	Bottom Cover Plate	10.0000	8.0000	80.0000	213.3333	1.8081	32.6936	246.0269
<b>Total</b>		<b>70.90</b>		<b>695.37</b>	<b>762.07</b>		<b>1266.12</b>	<b>2028.18</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	9.8081	in	S <sub>right</sub> =	163.33	in <sup>3</sup>	x-bar =	9.8081	in	S <sub>right</sub> =	163.33	in <sup>3</sup>
I <sub>y</sub> =	2028.18	in <sup>4</sup>	S <sub>left</sub> =	206.79	in <sup>3</sup>	I <sub>y</sub> =	2028.18	in <sup>4</sup>	S <sub>left</sub> =	206.79	in <sup>3</sup>
C <sub>right</sub> =	12.4174	in	A =	70.8976	in <sup>2</sup>	C <sub>right</sub> =	12.4174	in	A =	70.8976	in <sup>2</sup>
C <sub>left</sub> =	9.8081	in	r <sub>y</sub> =	5.3486	in	C <sub>left</sub> =	9.8081	in	r <sub>y</sub> =	5.3486	in





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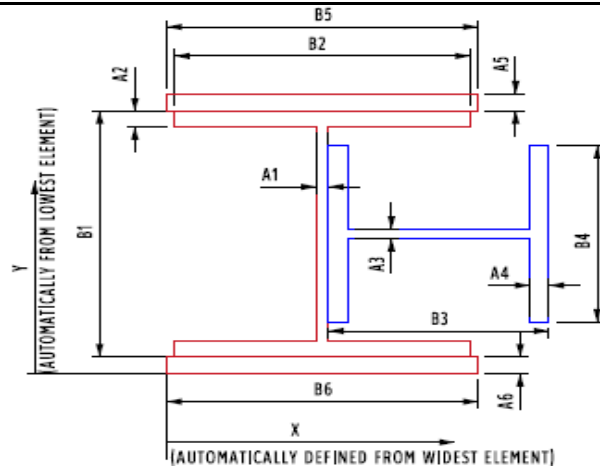
Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	CB16x114	<b>Top Cover Plate</b>
$A_1 = t_w = 0.6310$ in		$A_5 = t = 1.3750$ in
$B_1 = d = 16.6400$ in		$B_5 = b = 16.0000$ in
$A_2 = t_f = 1.0350$ in		<b>Bottom Cover Plate</b>
$B_2 = b_f = 11.6290$ in		$A_6 = t = 1.3750$ in
<b>Rolled Side Section*</b>	WF14x61	$B_6 = b = 16.0000$ in
$A_3 = t_w = 0.3780$ in		
$B_3 = d = 13.9100$ in		
$A_4 = t_f = 0.6430$ in		
$B_4 = b_f = 10.0000$ in		



\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web plate	9.1937	9.6950	89.1326	162.6398	0.0000	0.0000	162.6398
2	Main Top Flange	12.0360	17.4975	210.6002	1.0744	7.8025	732.7406	733.8151
	Main Bottom Flange	12.0360	1.8925	22.7782	1.0744	7.8025	732.7406	733.8151
3	Side Web Plate	4.7719	9.6950	46.2633	0.0568	0.0000	0.0000	0.0568
4	Side Flange Plates	12.8600	9.6950	124.6777	107.1667	0.0000	0.0000	107.1667
5	Top Cover Plate	22.0000	18.7025	411.4550	3.4661	9.0075	1784.9712	1788.4374
6	Bottom Cover Plate	22.0000	0.6875	15.1250	3.4661	9.0075	1784.9712	1788.4374
<b>Total</b>		<b>94.90</b>		<b>920.03</b>	<b>278.94</b>		<b>5035.42</b>	<b>5314.37</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

**Bent 29 North & South Column  
Upper Part with 2 Cover Plates**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	9.6950	in	$S_{top} = 548.16$ in <sup>3</sup>	y-bar =	9.6950	in	$S_{top} = 548.16$ in <sup>3</sup>
$I_x =$	5314.37	in <sup>4</sup>	$S_{bott.} = 548.16$ in <sup>3</sup>	$I_x =$	5314.37	in <sup>4</sup>	$S_{bott.} = 548.16$ in <sup>3</sup>
$C_{top} =$	9.6950	in	$A = 94.8976$ in <sup>2</sup>	$C_{top} =$	9.6950	in	$A = 94.8976$ in <sup>2</sup>
$C_{bottom} =$	9.6950	in	$r_x = 7.4834$ in	$C_{bottom} =$	9.6950	in	$r_x = 7.4834$ in
			$J = 39.54$ in <sup>4</sup>				



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

Y-Axis Section Properties:

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate	9.1937	8.0000	73.5494	0.3050	1.3509	16.7766	17.0817
2	Main Flanges	24.0720	8.0000	192.5762	271.2790	1.3509	43.9266	315.2057
3	Side Web Plate	4.7719	15.2705	72.8689	63.3726	5.9196	167.2171	230.5897
4	Side Left Flange	6.4300	8.6370	55.5359	0.2215	0.7139	3.2766	3.4982
	Side Right Flange	6.4300	21.9040	140.8427	0.2215	12.5531	1013.2493	1013.4708
5	Top Cover Plate	22.0000	8.0000	176.0000	469.3333	1.3509	40.1456	509.4789
6	Bottom Cover Plate	22.0000	8.0000	176.0000	469.3333	1.3509	40.1456	509.4789
<b>Total</b>		<b>94.90</b>		<b>887.37</b>	<b>1274.07</b>		<b>1324.74</b>	<b>2598.80</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	9.3509	in	S <sub>right</sub> =	201.85	in <sup>3</sup>	x-bar =	9.3509	in	S <sub>right</sub> =	201.85	in <sup>3</sup>
I <sub>y</sub> =	2598.80	in <sup>4</sup>	S <sub>left</sub> =	277.92	in <sup>3</sup>	I <sub>y</sub> =	2598.80	in <sup>4</sup>	S <sub>left</sub> =	277.92	in <sup>3</sup>
C <sub>right</sub> =	12.8746	in	A =	94.8976	in <sup>2</sup>	C <sub>right</sub> =	12.8746	in	A =	94.8976	in <sup>2</sup>
C <sub>left</sub> =	9.3509	in	r <sub>y</sub> =	5.2331	in	C <sub>left</sub> =	9.3509	in	r <sub>y</sub> =	5.2331	in



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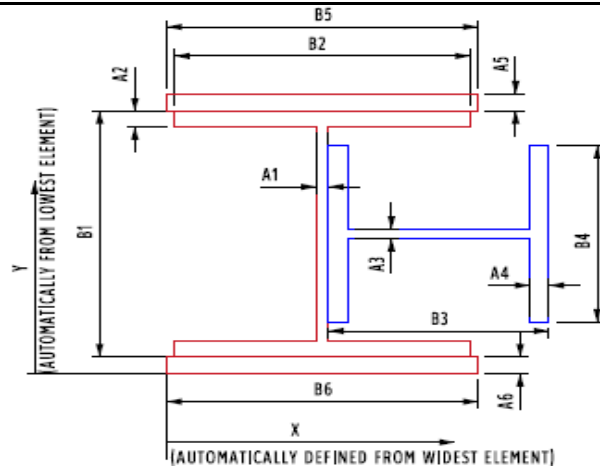
Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	CB16x114	<b>Top Cover Plate</b>
$A_1 = t_w = 0.6310$ in		$A_5 = t = 0.7500$ in
$B_1 = d = 16.6400$ in		$B_5 = b = 16.0000$ in
$A_2 = t_f = 1.0350$ in		<b>Bottom Cover Plate</b>
$B_2 = b_f = 11.6290$ in		$A_6 = t = 0.7500$ in
<b>Rolled Side Section*</b>	WF14x61	$B_6 = b = 16.0000$ in
$A_3 = t_w = 0.3780$ in		
$B_3 = d = 13.9100$ in		
$A_4 = t_f = 0.6430$ in		
$B_4 = b_f = 10.0000$ in		



\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web plate	9.1937	9.0700	83.3866	162.6398	0.0000	0.0000	162.6398
2	Main Top Flange	12.0360	16.8725	203.0777	1.0744	7.8025	732.7406	733.8151
	Main Bottom Flange	12.0360	1.2675	15.2556	1.0744	7.8025	732.7406	733.8151
3	Side Web Plate	4.7719	9.0700	43.2809	0.0568	0.0000	0.0000	0.0568
4	Side Flange Plates	12.8600	9.0700	116.6402	107.1667	0.0000	0.0000	107.1667
5	Top Cover Plate	12.0000	17.7650	213.1800	0.5625	8.6950	907.2363	907.7988
6	Bottom Cover Plate	12.0000	0.3750	4.5000	0.5625	8.6950	907.2363	907.7988
<b>Total</b>		<b>74.90</b>		<b>679.32</b>	<b>273.14</b>		<b>3279.95</b>	<b>3553.09</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	9.0700	in	S <sub>top</sub> = 391.74 in <sup>3</sup>	y-bar =	9.0700	in	S <sub>top</sub> = 391.74 in <sup>3</sup>
I <sub>x</sub> =	3553.09	in <sup>4</sup>	S <sub>bottom</sub> = 391.74 in <sup>3</sup>	I <sub>x</sub> =	3553.09	in <sup>4</sup>	S <sub>bottom</sub> = 391.74 in <sup>3</sup>
C <sub>top</sub> =	9.0700	in	A = 74.8976 in <sup>2</sup>	C <sub>top</sub> =	9.0700	in	A = 74.8976 in <sup>2</sup>
C <sub>bottom</sub> =	9.0700	in	r <sub>x</sub> = 6.8876 in	C <sub>bottom</sub> =	9.0700	in	r <sub>x</sub> = 6.8876 in
			J = 16.32 in <sup>4</sup>				



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Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate	9.1937	8.0000	73.5494	0.3050	1.7116	26.9326	27.2377
2	Main Flanges	24.0720	8.0000	192.5762	271.2790	1.7116	70.5184	341.7975
3	Side Web Plate	4.7719	15.2705	72.8689	63.3726	5.5589	147.4589	210.8315
4	Side Left Flange	6.4300	8.6370	55.5359	0.2215	1.0746	7.4247	7.6463
	Side Right Flange	6.4300	21.9040	140.8427	0.2215	12.1924	955.8537	956.0753
5	Top Cover Plate	12.0000	8.0000	96.0000	256.0000	1.7116	35.1537	291.1537
6	Bottom Cover Plate	12.0000	8.0000	96.0000	256.0000	1.7116	35.1537	291.1537
<b>Total</b>		<b>74.90</b>		<b>727.37</b>	<b>847.40</b>		<b>1278.50</b>	<b>2125.90</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	9.7116	in	S <sub>right</sub> =	169.88	in <sup>3</sup>	x-bar =	9.7116	in	S <sub>right</sub> =	169.88	in <sup>3</sup>
I <sub>y</sub> =	2125.90	in <sup>4</sup>	S <sub>left</sub> =	218.90	in <sup>3</sup>	I <sub>y</sub> =	2125.90	in <sup>4</sup>	S <sub>left</sub> =	218.90	in <sup>3</sup>
C <sub>right</sub> =	12.5139	in	A =	74.8976	in <sup>2</sup>	C <sub>right</sub> =	12.5139	in	A =	74.8976	in <sup>2</sup>
C <sub>left</sub> =	9.7116	in	r <sub>y</sub> =	5.3277	in	C <sub>left</sub> =	9.7116	in	r <sub>y</sub> =	5.3277	in



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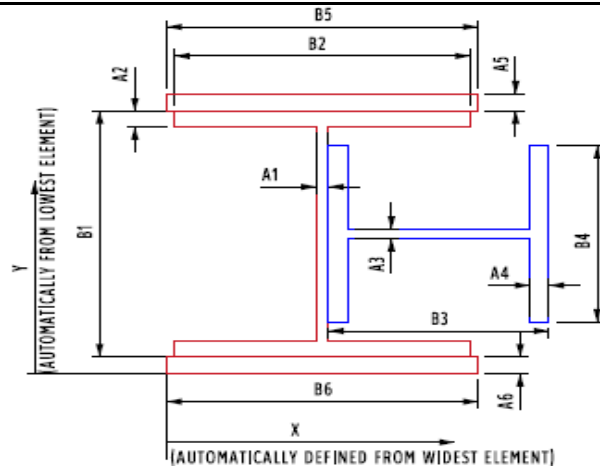
Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	CB16x88	<b>Top Cover Plate</b>	
$A_1 = t_w =$	0.5040 in	$A_5 = t =$	0.7500 in
$B_1 = d =$	16.1600 in	$B_5 = b =$	16.0000 in
$A_2 = t_f =$	0.7950 in	<b>Bottom Cover Plate</b>	
$B_2 = b_f =$	11.5020 in	$A_6 = t =$	0.7500 in
<b>Rolled Side Section*</b>	WF14x53	$B_6 = b =$	16.0000 in
$A_3 = t_w =$	0.3700 in		
$B_3 = d =$	13.9400 in		
$A_4 = t_f =$	0.6580 in		
$B_4 = b_f =$	8.0620 in		



**Bent 30 North & South Column**

\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web plate	7.3433	8.8300	64.8412	129.9056	0.0000	0.0000	129.9056
2	Main Top Flange	9.1441	16.5125	150.9918	0.4816	7.6825	539.6916	540.1732
	Main Bottom Flange	9.1441	1.1475	10.4928	0.4816	7.6825	539.6916	540.1732
3	Side Web Plate	4.6709	8.8300	41.2439	0.0533	0.0000	0.0000	0.0533
4	Side Flange Plates	10.6096	8.8300	93.6827	57.4649	0.0000	0.0000	57.4649
5	Top Cover Plate	12.0000	17.2850	207.4200	0.5625	8.4550	857.8443	858.4068
6	Bottom Cover Plate	12.0000	0.3750	4.5000	0.5625	8.4550	857.8443	858.4068
<b>Total</b>		<b>64.91</b>		<b>573.17</b>	<b>189.51</b>		<b>2795.07</b>	<b>2984.58</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	8.8300 in	S <sub>top</sub> =	338.00 in <sup>3</sup>	y-bar =	8.8300 in	S <sub>top</sub> =	338.00 in <sup>3</sup>
I <sub>x</sub> =	2984.58 in <sup>4</sup>	S <sub>bottom</sub> =	338.00 in <sup>3</sup>	I <sub>x</sub> =	2984.58 in <sup>4</sup>	S <sub>bottom</sub> =	338.00 in <sup>3</sup>
C <sub>top</sub> =	8.8300 in	A =	64.9119 in <sup>2</sup>	C <sub>top</sub> =	8.8300 in	A =	64.9119 in <sup>2</sup>
C <sub>bottom</sub> =	8.8300 in	r <sub>x</sub> =	6.7808 in	C <sub>bottom</sub> =	8.8300 in	r <sub>x</sub> =	6.7808 in
		J =	10.72 in <sup>4</sup>				



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Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate	7.3433	8.0000	58.7462	0.1554	1.7001	21.2241	21.3796
2	Main Flanges	18.2882	8.0000	146.3054	201.6211	1.7001	52.8579	254.4790
3	Side Web Plate	4.6709	15.2220	71.1001	62.0314	5.5219	142.4225	204.4539
4	Side Left Flange	5.3048	8.5810	45.5205	0.1914	1.1191	6.6434	6.8348
	Side Right Flange	5.3048	21.8630	115.9788	0.1914	12.1629	784.7734	784.9648
5	Top Cover Plate	12.0000	8.0000	96.0000	256.0000	1.7001	34.6833	290.6833
6	Bottom Cover Plate	12.0000	8.0000	96.0000	256.0000	1.7001	34.6833	290.6833
<b>Total</b>		<b>64.91</b>		<b>629.65</b>	<b>776.19</b>		<b>1077.29</b>	<b>1853.48</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	9.7001	in	S <sub>right</sub> =	148.37	in <sup>3</sup>	x-bar =	9.7001	in	S <sub>right</sub> =	148.37	in <sup>3</sup>
I <sub>y</sub> =	1853.48	in <sup>4</sup>	S <sub>left</sub> =	191.08	in <sup>3</sup>	I <sub>y</sub> =	1853.48	in <sup>4</sup>	S <sub>left</sub> =	191.08	in <sup>3</sup>
C <sub>right</sub> =	12.4919	in	A =	64.9119	in <sup>2</sup>	C <sub>right</sub> =	12.4919	in	A =	64.9119	in <sup>2</sup>
C <sub>left</sub> =	9.7001	in	r <sub>y</sub> =	5.3436	in	C <sub>left</sub> =	9.7001	in	r <sub>y</sub> =	5.3436	in



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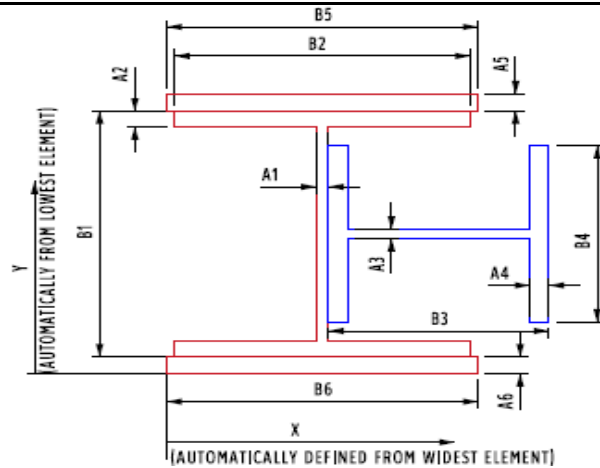
Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	CB16x88	<b>Top Cover Plate</b>	
$A_1 = t_w =$	0.5040 in	$A_5 = t =$	0.7500 in
$B_1 = d =$	16.1600 in	$B_5 = b =$	16.0000 in
$A_2 = t_f =$	0.7950 in	<b>Bottom Cover Plate</b>	
$B_2 = b_f =$	11.5020 in	$A_6 = t =$	0.7500 in
<b>Rolled Side Section*</b>	WF14x53	$B_6 = b =$	16.0000 in
$A_3 = t_w =$	0.3700 in		
$B_3 = d =$	13.9400 in		
$A_4 = t_f =$	0.6580 in		
$B_4 = b_f =$	8.0620 in		



**Bent 31 North & South Column**

\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web plate	7.3433	8.8300	64.8412	129.9056	0.0000	0.0000	129.9056
2	Main Top Flange	9.1441	16.5125	150.9918	0.4816	7.6825	539.6916	540.1732
	Main Bottom Flange	9.1441	1.1475	10.4928	0.4816	7.6825	539.6916	540.1732
3	Side Web Plate	4.6709	8.8300	41.2439	0.0533	0.0000	0.0000	0.0533
4	Side Flange Plates	10.6096	8.8300	93.6827	57.4649	0.0000	0.0000	57.4649
5	Top Cover Plate	12.0000	17.2850	207.4200	0.5625	8.4550	857.8443	858.4068
6	Bottom Cover Plate	12.0000	0.3750	4.5000	0.5625	8.4550	857.8443	858.4068
<b>Total</b>		<b>64.91</b>		<b>573.17</b>	<b>189.51</b>		<b>2795.07</b>	<b>2984.58</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	8.8300 in	S <sub>top</sub> =	338.00 in <sup>3</sup>	y-bar =	8.8300 in	S <sub>top</sub> =	338.00 in <sup>3</sup>
I <sub>x</sub> =	2984.58 in <sup>4</sup>	S <sub>bottom</sub> =	338.00 in <sup>3</sup>	I <sub>x</sub> =	2984.58 in <sup>4</sup>	S <sub>bottom</sub> =	338.00 in <sup>3</sup>
C <sub>top</sub> =	8.8300 in	A =	64.9119 in <sup>2</sup>	C <sub>top</sub> =	8.8300 in	A =	64.9119 in <sup>2</sup>
C <sub>bottom</sub> =	8.8300 in	r <sub>x</sub> =	6.7808 in	C <sub>bottom</sub> =	8.8300 in	r <sub>x</sub> =	6.7808 in
		J =	10.72 in <sup>4</sup>				



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Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate	7.3433	8.0000	58.7462	0.1554	1.7001	21.2241	21.3796
2	Main Flanges	18.2882	8.0000	146.3054	201.6211	1.7001	52.8579	254.4790
3	Side Web Plate	4.6709	15.2220	71.1001	62.0314	5.5219	142.4225	204.4539
4	Side Left Flange	5.3048	8.5810	45.5205	0.1914	1.1191	6.6434	6.8348
	Side Right Flange	5.3048	21.8630	115.9788	0.1914	12.1629	784.7734	784.9648
5	Top Cover Plate	12.0000	8.0000	96.0000	256.0000	1.7001	34.6833	290.6833
6	Bottom Cover Plate	12.0000	8.0000	96.0000	256.0000	1.7001	34.6833	290.6833
<b>Total</b>		<b>64.91</b>		<b>629.65</b>	<b>776.19</b>		<b>1077.29</b>	<b>1853.48</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	9.7001	in	S <sub>right</sub> =	148.37	in <sup>3</sup>	x-bar =	9.7001	in	S <sub>right</sub> =	148.37	in <sup>3</sup>
I <sub>y</sub> =	1853.48	in <sup>4</sup>	S <sub>left</sub> =	191.08	in <sup>3</sup>	I <sub>y</sub> =	1853.48	in <sup>4</sup>	S <sub>left</sub> =	191.08	in <sup>3</sup>
C <sub>right</sub> =	12.4919	in	A =	64.9119	in <sup>2</sup>	C <sub>right</sub> =	12.4919	in	A =	64.9119	in <sup>2</sup>
C <sub>left</sub> =	9.7001	in	r <sub>y</sub> =	5.3436	in	C <sub>left</sub> =	9.7001	in	r <sub>y</sub> =	5.3436	in





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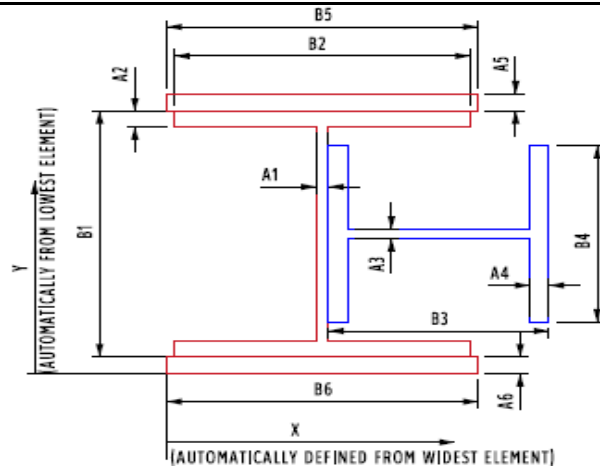
Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	CB16x114	<b>Top Cover Plate</b>
$A_1 = t_w = 0.6310$ in		$A_5 = t = 1.8750$ in
$B_1 = d = 16.6400$ in		$B_5 = b = 16.0000$ in
$A_2 = t_f = 1.0350$ in		<b>Bottom Cover Plate</b>
$B_2 = b_f = 11.6290$ in		$A_6 = t = 1.8750$ in
<b>Rolled Side Section*</b>	WF14x68	$B_6 = b = 16.0000$ in
$A_3 = t_w = 0.4180$ in		
$B_3 = d = 14.0600$ in		
$A_4 = t_f = 0.7180$ in		
$B_4 = b_f = 10.0400$ in		



\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web plate	9.1937	10.1950	93.7295	162.6398	0.0000	0.0000	162.6398
2	Main Top Flange	12.0360	17.9975	216.6182	1.0744	7.8025	732.7406	733.8151
	Main Bottom Flange	12.0360	2.3925	28.7962	1.0744	7.8025	732.7406	733.8151
3	Side Web Plate	5.2768	10.1950	53.7973	0.0768	0.0000	0.0000	0.0768
4	Side Flange Plates	14.4174	10.1950	146.9858	121.1084	0.0000	0.0000	121.1084
5	Top Cover Plate	30.0000	19.4525	583.5750	8.7891	9.2575	2571.0392	2579.8283
6	Bottom Cover Plate	30.0000	0.9375	28.1250	8.7891	9.2575	2571.0392	2579.8283
<b>Total</b>		<b>112.96</b>		<b>1151.63</b>	<b>303.55</b>		<b>6607.56</b>	<b>6911.11</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	10.1950 in	$S_{top} =$	677.89 in <sup>3</sup>	y-bar =	10.1950 in	$S_{top} =$	677.89 in <sup>3</sup>
$I_x =$	6911.11 in <sup>4</sup>	$S_{bott.} =$	677.89 in <sup>3</sup>	$I_x =$	6911.11 in <sup>4</sup>	$S_{bott.} =$	677.89 in <sup>3</sup>
$C_{top} =$	10.1950 in	A =	112.9600 in <sup>2</sup>	$C_{top} =$	10.1950 in	A =	112.9600 in <sup>2</sup>
$C_{bottom} =$	10.1950 in	$r_x =$	7.8219 in	$C_{bottom} =$	10.1950 in	$r_x =$	7.8219 in
		J =	82.91 in <sup>4</sup>				



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate	9.1937	8.0000	73.5494	0.3050	1.2807	15.0786	15.3837
2	Main Flanges	24.0720	8.0000	192.5762	271.2790	1.2807	39.4808	310.7598
3	Side Web Plate	5.2768	15.3455	80.9756	70.0787	6.0648	194.0934	264.1721
4	Side Left Flange	7.2087	8.6745	62.5320	0.3097	0.6062	2.6488	2.9585
	Side Right Flange	7.2087	22.0165	158.7108	0.3097	12.7358	1169.2645	1169.5742
5	Top Cover Plate	30.0000	8.0000	240.0000	640.0000	1.2807	49.2034	689.2034
6	Bottom Cover Plate	30.0000	8.0000	240.0000	640.0000	1.2807	49.2034	689.2034
<b>Total</b>		<b>112.96</b>		<b>1048.34</b>	<b>1622.28</b>		<b>1518.97</b>	<b>3141.25</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	9.2807	in	S <sub>right</sub> =	239.89	in <sup>3</sup>	x-bar =	9.2807	in	S <sub>right</sub> =	239.89	in <sup>3</sup>
I <sub>y</sub> =	3141.25	in <sup>4</sup>	S <sub>left</sub> =	338.47	in <sup>3</sup>	I <sub>y</sub> =	3141.25	in <sup>4</sup>	S <sub>left</sub> =	338.47	in <sup>3</sup>
C <sub>right</sub> =	13.0948	in	A =	112.9600	in <sup>2</sup>	C <sub>right</sub> =	13.0948	in	A =	112.9600	in <sup>2</sup>
C <sub>left</sub> =	9.2807	in	r <sub>y</sub> =	5.2734	in	C <sub>left</sub> =	9.2807	in	r <sub>y</sub> =	5.2734	in



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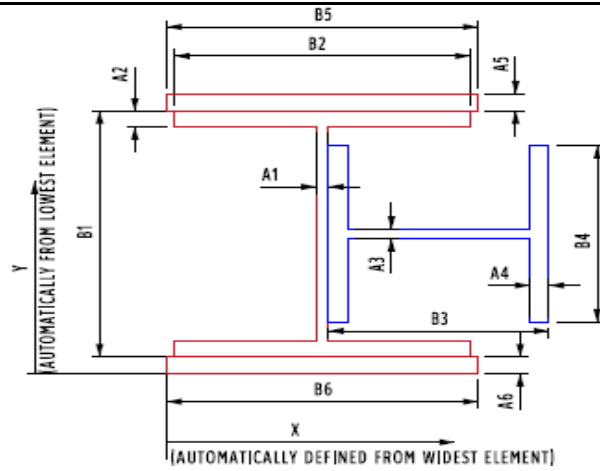
Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	CB16x114	<b>Top Cover Plate</b>
$A_1 = t_w = 0.6310$ in		$A_5 = t = 1.0000$ in
$B_1 = d = 16.6400$ in		$B_5 = b = 16.0000$ in
$A_2 = t_f = 1.0350$ in		<b>Bottom Cover Plate</b>
$B_2 = b_f = 11.6290$ in		$A_6 = t = 1.0000$ in
<b>Rolled Side Section*</b>	WF14x68	$B_6 = b = 16.0000$ in
$A_3 = t_w = 0.4180$ in		
$B_3 = d = 14.0600$ in		
$A_4 = t_f = 0.7180$ in		
$B_4 = b_f = 10.0400$ in		



\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web plate	9.1937	9.3200	85.6850	162.6398	0.0000	0.0000	162.6398
2	Main Top Flange	12.0360	17.1225	206.0867	1.0744	7.8025	732.7406	733.8151
	Main Bottom Flange	12.0360	1.5175	18.2647	1.0744	7.8025	732.7406	733.8151
3	Side Web Plate	5.2768	9.3200	49.1801	0.0768	0.0000	0.0000	0.0768
4	Side Flange Plates	14.4174	9.3200	134.3705	121.1084	0.0000	0.0000	121.1084
5	Top Cover Plate	16.0000	18.1400	290.2400	1.3333	8.8200	1244.6784	1246.0117
6	Bottom Cover Plate	16.0000	0.5000	8.0000	1.3333	8.8200	1244.6784	1246.0117
<b>Total</b>		<b>84.96</b>		<b>791.83</b>	<b>288.64</b>		<b>3954.84</b>	<b>4243.48</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

**Bent 32 North Column**  
**Lower Part with 1 Cover Plate**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	9.3200 in	$S_{top} =$	455.31 in <sup>3</sup>	y-bar =	9.3200 in	$S_{top} =$	455.31 in <sup>3</sup>
$I_x =$	4243.48 in <sup>4</sup>	$S_{bott.} =$	455.31 in <sup>3</sup>	$I_x =$	4243.48 in <sup>4</sup>	$S_{bott.} =$	455.31 in <sup>3</sup>
$C_{top} =$	9.3200 in	A =	84.9600 in <sup>2</sup>	$C_{top} =$	9.3200 in	A =	84.9600 in <sup>2</sup>
$C_{bottom} =$	9.3200 in	$r_x =$	7.0673 in	$C_{bottom} =$	9.3200 in	$r_x =$	7.0673 in
		J =	23.27 in <sup>4</sup>				



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate	9.1937	8.0000	73.5494	0.3050	1.7027	26.6553	26.9603
2	Main Flanges	24.0720	8.0000	192.5762	271.2790	1.7027	69.7922	341.0712
3	Side Web Plate	5.2768	15.3455	80.9756	70.0787	5.6428	168.0186	238.0973
4	Side Left Flange	7.2087	8.6745	62.5320	0.3097	1.0282	7.6215	7.9312
	Side Right Flange	7.2087	22.0165	158.7108	0.3097	12.3138	1093.0497	1093.3594
5	Top Cover Plate	16.0000	8.0000	128.0000	341.3333	1.7027	46.3889	387.7222
6	Bottom Cover Plate	16.0000	8.0000	128.0000	341.3333	1.7027	46.3889	387.7222
<b>Total</b>		<b>84.96</b>		<b>824.34</b>	<b>1024.95</b>		<b>1457.91</b>	<b>2482.86</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	9.7027	in	S <sub>right</sub> =	195.92	in <sup>3</sup>	x-bar =	9.7027	in	S <sub>right</sub> =	195.92	in <sup>3</sup>
I <sub>y</sub> =	2482.86	in <sup>4</sup>	S <sub>left</sub> =	255.89	in <sup>3</sup>	I <sub>y</sub> =	2482.86	in <sup>4</sup>	S <sub>left</sub> =	255.89	in <sup>3</sup>
C <sub>right</sub> =	12.6728	in	A =	84.9600	in <sup>2</sup>	C <sub>right</sub> =	12.6728	in	A =	84.9600	in <sup>2</sup>
C <sub>left</sub> =	9.7027	in	r <sub>y</sub> =	5.4059	in	C <sub>left</sub> =	9.7027	in	r <sub>y</sub> =	5.4059	in



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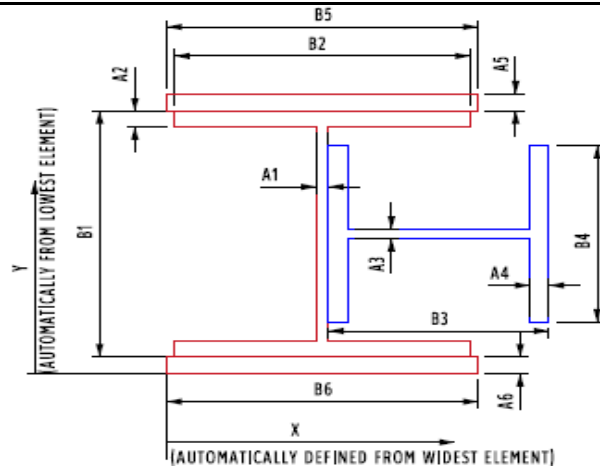
Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	CB16x88	<b>Top Cover Plate</b>
$A_1 = t_w = 0.5040$ in		$A_5 = t = 0.5000$ in
$B_1 = d = 16.1600$ in		$B_5 = b = 16.0000$ in
$A_2 = t_f = 0.7950$ in		<b>Bottom Cover Plate</b>
$B_2 = b_f = 11.5020$ in		$A_6 = t = 0.5000$ in
<b>Rolled Side Section*</b>	WF14x48	$B_6 = b = 16.0000$ in
$A_3 = t_w = 0.3390$ in		
$B_3 = d = 13.8100$ in		
$A_4 = t_f = 0.5930$ in		
$B_4 = b_f = 8.0310$ in		



**Bent 32 South Column**

\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web plate	7.3433	8.5800	63.0053	129.9056	0.0000	0.0000	129.9056
2	Main Top Flange	9.1441	16.2625	148.7058	0.4816	7.6825	539.6916	540.1732
	Main Bottom Flange	9.1441	0.8975	8.2068	0.4816	7.6825	539.6916	540.1732
3	Side Web Plate	4.2795	8.5800	36.7184	0.0410	0.0000	0.0000	0.0410
4	Side Flange Plates	9.5248	8.5800	81.7225	51.1932	0.0000	0.0000	51.1932
5	Top Cover Plate	8.0000	16.9100	135.2800	0.1667	8.3300	555.1112	555.2779
6	Bottom Cover Plate	8.0000	0.2500	2.0000	0.1667	8.3300	555.1112	555.2779
<b>Total</b>		<b>55.44</b>		<b>475.64</b>	<b>182.44</b>		<b>2189.61</b>	<b>2372.04</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	8.5800	in	S <sub>top</sub> = 276.46 in <sup>3</sup>	y-bar =	8.5800	in	S <sub>top</sub> = 276.46 in <sup>3</sup>
I <sub>x</sub> =	2372.04	in <sup>4</sup>	S <sub>bottom</sub> = 276.46 in <sup>3</sup>	I <sub>x</sub> =	2372.04	in <sup>4</sup>	S <sub>bottom</sub> = 276.46 in <sup>3</sup>
C <sub>top</sub> =	8.5800	in	A = 55.4358 in <sup>2</sup>	C <sub>top</sub> =	8.5800	in	A = 55.4358 in <sup>2</sup>
C <sub>bottom</sub> =	8.5800	in	r <sub>x</sub> = 6.5413 in	C <sub>bottom</sub> =	8.5800	in	r <sub>x</sub> = 6.5413 in
			J = 7.09 in <sup>4</sup>				



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Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

Y-Axis Section Properties:

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate	7.3433	8.0000	58.7462	0.1554	1.7822	23.3239	23.4793
2	Main Flanges	18.2882	8.0000	146.3054	201.6211	1.7822	58.0873	259.7084
3	Side Web Plate	4.2795	15.1570	64.8649	56.8342	5.3748	123.6295	180.4636
4	Side Left Flange	4.7624	8.5485	40.7112	0.1396	1.2337	7.2484	7.3879
	Side Right Flange	4.7624	21.7655	103.6556	0.1396	11.9833	683.8762	684.0157
5	Top Cover Plate	8.0000	8.0000	64.0000	170.6667	1.7822	25.4098	196.0764
6	Bottom Cover Plate	8.0000	8.0000	64.0000	170.6667	1.7822	25.4098	196.0764
<b>Total</b>		<b>55.44</b>		<b>542.28</b>	<b>600.22</b>		<b>946.98</b>	<b>1547.21</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	9.7822	in	S <sub>right</sub> =	126.00	in <sup>3</sup>	x-bar =	9.7822	in	S <sub>right</sub> =	126.00	in <sup>3</sup>
I <sub>y</sub> =	1547.21	in <sup>4</sup>	S <sub>left</sub> =	158.17	in <sup>3</sup>	I <sub>y</sub> =	1547.21	in <sup>4</sup>	S <sub>left</sub> =	158.17	in <sup>3</sup>
C <sub>right</sub> =	12.2798	in	A =	55.4358	in <sup>2</sup>	C <sub>right</sub> =	12.2798	in	A =	55.4358	in <sup>2</sup>
C <sub>left</sub> =	9.7822	in	r <sub>y</sub> =	5.2830	in	C <sub>left</sub> =	9.7822	in	r <sub>y</sub> =	5.2830	in



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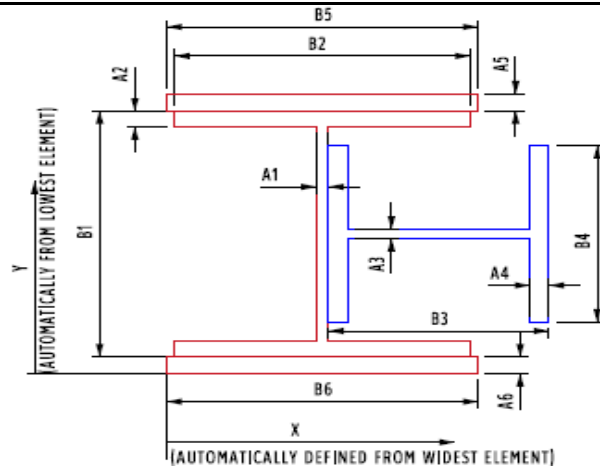
Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	CB16x114	<b>Top Cover Plate</b>
$A_1 = t_w = 0.6310$ in		$A_5 = t = 1.0000$ in
$B_1 = d = 16.6400$ in		$B_5 = b = 16.0000$ in
$A_2 = t_f = 1.0350$ in		<b>Bottom Cover Plate</b>
$B_2 = b_f = 11.6290$ in		$A_6 = t = 1.0000$ in
<b>Rolled Side Section*</b>	WF14x68	$B_6 = b = 16.0000$ in
$A_3 = t_w = 0.4180$ in		
$B_3 = d = 14.0600$ in		
$A_4 = t_f = 0.7180$ in		
$B_4 = b_f = 10.0400$ in		



\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web plate	9.1937	9.3200	85.6850	162.6398	0.0000	0.0000	162.6398
2	Main Top Flange	12.0360	17.1225	206.0867	1.0744	7.8025	732.7406	733.8151
	Main Bottom Flange	12.0360	1.5175	18.2647	1.0744	7.8025	732.7406	733.8151
3	Side Web Plate	5.2768	9.3200	49.1801	0.0768	0.0000	0.0000	0.0768
4	Side Flange Plates	14.4174	9.3200	134.3705	121.1084	0.0000	0.0000	121.1084
5	Top Cover Plate	16.0000	18.1400	290.2400	1.3333	8.8200	1244.6784	1246.0117
6	Bottom Cover Plate	16.0000	0.5000	8.0000	1.3333	8.8200	1244.6784	1246.0117
<b>Total</b>		<b>84.96</b>		<b>791.83</b>	<b>288.64</b>		<b>3954.84</b>	<b>4243.48</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	9.3200	in	S <sub>top</sub> = 455.31 in <sup>3</sup>	y-bar =	9.3200	in	S <sub>top</sub> = 455.31 in <sup>3</sup>
I <sub>x</sub> =	4243.48	in <sup>4</sup>	S <sub>bottom</sub> = 455.31 in <sup>3</sup>	I <sub>x</sub> =	4243.48	in <sup>4</sup>	S <sub>bottom</sub> = 455.31 in <sup>3</sup>
C <sub>top</sub> =	9.3200	in	A = 84.9600 in <sup>2</sup>	C <sub>top</sub> =	9.3200	in	A = 84.9600 in <sup>2</sup>
C <sub>bottom</sub> =	9.3200	in	r <sub>x</sub> = 7.0673 in	C <sub>bottom</sub> =	9.3200	in	r <sub>x</sub> = 7.0673 in
			J = 23.27 in <sup>4</sup>				



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Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

Y-Axis Section Properties:

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate	9.1937	8.0000	73.5494	0.3050	1.7027	26.6553	26.9603
2	Main Flanges	24.0720	8.0000	192.5762	271.2790	1.7027	69.7922	341.0712
3	Side Web Plate	5.2768	15.3455	80.9756	70.0787	5.6428	168.0186	238.0973
4	Side Left Flange	7.2087	8.6745	62.5320	0.3097	1.0282	7.6215	7.9312
	Side Right Flange	7.2087	22.0165	158.7108	0.3097	12.3138	1093.0497	1093.3594
5	Top Cover Plate	16.0000	8.0000	128.0000	341.3333	1.7027	46.3889	387.7222
6	Bottom Cover Plate	16.0000	8.0000	128.0000	341.3333	1.7027	46.3889	387.7222
<b>Total</b>		<b>84.96</b>		<b>824.34</b>	<b>1024.95</b>		<b>1457.91</b>	<b>2482.86</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	9.7027	in	S <sub>right</sub> =	195.92	in <sup>3</sup>	x-bar =	9.7027	in	S <sub>right</sub> =	195.92	in <sup>3</sup>
I <sub>y</sub> =	2482.86	in <sup>4</sup>	S <sub>left</sub> =	255.89	in <sup>3</sup>	I <sub>y</sub> =	2482.86	in <sup>4</sup>	S <sub>left</sub> =	255.89	in <sup>3</sup>
C <sub>right</sub> =	12.6728	in	A =	84.9600	in <sup>2</sup>	C <sub>right</sub> =	12.6728	in	A =	84.9600	in <sup>2</sup>
C <sub>left</sub> =	9.7027	in	r <sub>y</sub> =	5.4059	in	C <sub>left</sub> =	9.7027	in	r <sub>y</sub> =	5.4059	in





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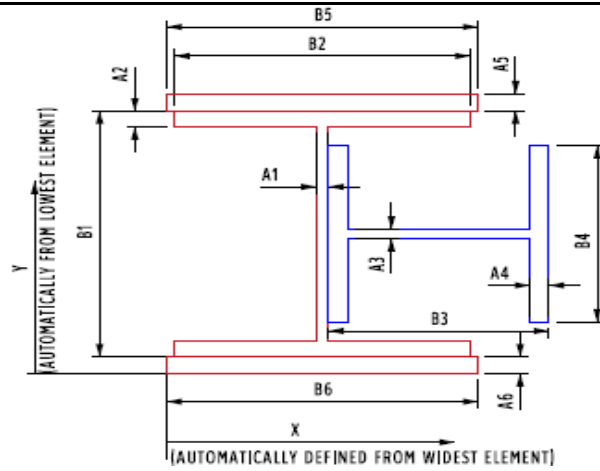
Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	CB16x88	<b>Top Cover Plate</b>	
$A_1 = t_w =$	0.5040 in	$A_5 = t =$	0.5000 in
$B_1 = d =$	16.1600 in	$B_5 = b =$	16.0000 in
$A_2 = t_f =$	0.7950 in	<b>Bottom Cover Plate</b>	
$B_2 = b_f =$	11.5020 in	$A_6 = t =$	0.5000 in
<b>Rolled Side Section*</b>	WF14x48	$B_6 = b =$	16.0000 in
$A_3 = t_w =$	0.3390 in		
$B_3 = d =$	13.8100 in		
$A_4 = t_f =$	0.5930 in		
$B_4 = b_f =$	8.0310 in		



\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web plate	7.3433	8.5800	63.0053	129.9056	0.0000	0.0000	129.9056
2	Main Top Flange	9.1441	16.2625	148.7058	0.4816	7.6825	539.6916	540.1732
	Main Bottom Flange	9.1441	0.8975	8.2068	0.4816	7.6825	539.6916	540.1732
3	Side Web Plate	4.2795	8.5800	36.7184	0.0410	0.0000	0.0000	0.0410
4	Side Flange Plates	9.5248	8.5800	81.7225	51.1932	0.0000	0.0000	51.1932
5	Top Cover Plate	8.0000	16.9100	135.2800	0.1667	8.3300	555.1112	555.2779
6	Bottom Cover Plate	8.0000	0.2500	2.0000	0.1667	8.3300	555.1112	555.2779
<b>Total</b>		<b>55.44</b>		<b>475.64</b>	<b>182.44</b>		<b>2189.61</b>	<b>2372.04</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	8.5800 in	$S_{top} =$	276.46 in <sup>3</sup>	y-bar =	8.5800 in	$S_{top} =$	276.46 in <sup>3</sup>
$I_x =$	2372.04 in <sup>4</sup>	$S_{bott.} =$	276.46 in <sup>3</sup>	$I_x =$	2372.04 in <sup>4</sup>	$S_{bott.} =$	276.46 in <sup>3</sup>
$C_{top} =$	8.5800 in	A =	55.4358 in <sup>2</sup>	$C_{top} =$	8.5800 in	A =	55.4358 in <sup>2</sup>
$C_{bottom} =$	8.5800 in	$r_x =$	6.5413 in	$C_{bottom} =$	8.5800 in	$r_x =$	6.5413 in
		J =	7.09 in <sup>4</sup>				



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Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate	7.3433	8.0000	58.7462	0.1554	1.7822	23.3239	23.4793
2	Main Flanges	18.2882	8.0000	146.3054	201.6211	1.7822	58.0873	259.7084
3	Side Web Plate	4.2795	15.1570	64.8649	56.8342	5.3748	123.6295	180.4636
4	Side Left Flange	4.7624	8.5485	40.7112	0.1396	1.2337	7.2484	7.3879
	Side Right Flange	4.7624	21.7655	103.6556	0.1396	11.9833	683.8762	684.0157
5	Top Cover Plate	8.0000	8.0000	64.0000	170.6667	1.7822	25.4098	196.0764
6	Bottom Cover Plate	8.0000	8.0000	64.0000	170.6667	1.7822	25.4098	196.0764
<b>Total</b>		<b>55.44</b>		<b>542.28</b>	<b>600.22</b>		<b>946.98</b>	<b>1547.21</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	9.7822	in	S <sub>right</sub> =	126.00	in <sup>3</sup>	x-bar =	9.7822	in	S <sub>right</sub> =	126.00	in <sup>3</sup>
I <sub>y</sub> =	1547.21	in <sup>4</sup>	S <sub>left</sub> =	158.17	in <sup>3</sup>	I <sub>y</sub> =	1547.21	in <sup>4</sup>	S <sub>left</sub> =	158.17	in <sup>3</sup>
C <sub>right</sub> =	12.2798	in	A =	55.4358	in <sup>2</sup>	C <sub>right</sub> =	12.2798	in	A =	55.4358	in <sup>2</sup>
C <sub>left</sub> =	9.7822	in	r <sub>y</sub> =	5.2830	in	C <sub>left</sub> =	9.7822	in	r <sub>y</sub> =	5.2830	in



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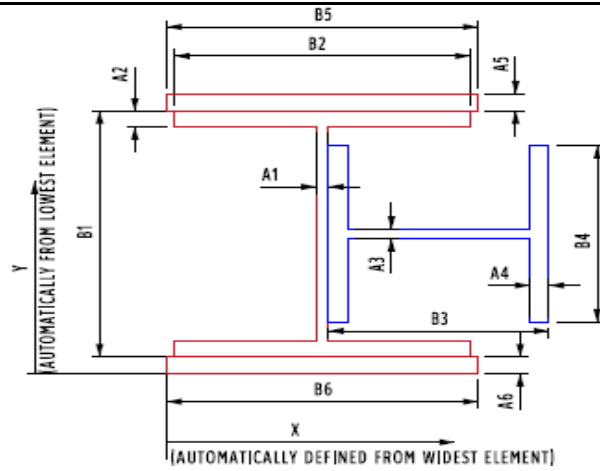
Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	CB16x88	<b>Top Cover Plate</b>
$A_1 = t_w = 0.5040$ in		$A_5 = t = 0.5000$ in
$B_1 = d = 16.1600$ in		$B_5 = b = 16.0000$ in
$A_2 = t_f = 0.7950$ in		<b>Bottom Cover Plate</b>
$B_2 = b_f = 11.5020$ in		$A_6 = t = 0.5000$ in
<b>Rolled Side Section*</b>	WF14x48	$B_6 = b = 16.0000$ in
$A_3 = t_w = 0.3390$ in		
$B_3 = d = 13.8100$ in		
$A_4 = t_f = 0.5930$ in		
$B_4 = b_f = 8.0310$ in		



\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web plate	7.3433	8.5800	63.0053	129.9056	0.0000	0.0000	129.9056
2	Main Top Flange	9.1441	16.2625	148.7058	0.4816	7.6825	539.6916	540.1732
	Main Bottom Flange	9.1441	0.8975	8.2068	0.4816	7.6825	539.6916	540.1732
3	Side Web Plate	4.2795	8.5800	36.7184	0.0410	0.0000	0.0000	0.0410
4	Side Flange Plates	9.5248	8.5800	81.7225	51.1932	0.0000	0.0000	51.1932
5	Top Cover Plate	8.0000	16.9100	135.2800	0.1667	8.3300	555.1112	555.2779
6	Bottom Cover Plate	8.0000	0.2500	2.0000	0.1667	8.3300	555.1112	555.2779
<b>Total</b>		<b>55.44</b>		<b>475.64</b>	<b>182.44</b>		<b>2189.61</b>	<b>2372.04</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	8.5800	in	S <sub>top</sub> = 276.46 in <sup>3</sup>	y-bar =	8.5800	in	S <sub>top</sub> = 276.46 in <sup>3</sup>
I <sub>x</sub> =	2372.04	in <sup>4</sup>	S <sub>bottom</sub> = 276.46 in <sup>3</sup>	I <sub>x</sub> =	2372.04	in <sup>4</sup>	S <sub>bottom</sub> = 276.46 in <sup>3</sup>
C <sub>top</sub> =	8.5800	in	A = 55.4358 in <sup>2</sup>	C <sub>top</sub> =	8.5800	in	A = 55.4358 in <sup>2</sup>
C <sub>bottom</sub> =	8.5800	in	r <sub>x</sub> = 6.5413 in	C <sub>bottom</sub> =	8.5800	in	r <sub>x</sub> = 6.5413 in
			J = 7.09 in <sup>4</sup>				



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Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

Y-Axis Section Properties:

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate	7.3433	8.0000	58.7462	0.1554	1.7822	23.3239	23.4793
2	Main Flanges	18.2882	8.0000	146.3054	201.6211	1.7822	58.0873	259.7084
3	Side Web Plate	4.2795	15.1570	64.8649	56.8342	5.3748	123.6295	180.4636
4	Side Left Flange	4.7624	8.5485	40.7112	0.1396	1.2337	7.2484	7.3879
	Side Right Flange	4.7624	21.7655	103.6556	0.1396	11.9833	683.8762	684.0157
5	Top Cover Plate	8.0000	8.0000	64.0000	170.6667	1.7822	25.4098	196.0764
6	Bottom Cover Plate	8.0000	8.0000	64.0000	170.6667	1.7822	25.4098	196.0764
<b>Total</b>		<b>55.44</b>		<b>542.28</b>	<b>600.22</b>		<b>946.98</b>	<b>1547.21</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	9.7822	in	S <sub>right</sub> =	126.00	in <sup>3</sup>	x-bar =	9.7822	in	S <sub>right</sub> =	126.00	in <sup>3</sup>
I <sub>y</sub> =	1547.21	in <sup>4</sup>	S <sub>left</sub> =	158.17	in <sup>3</sup>	I <sub>y</sub> =	1547.21	in <sup>4</sup>	S <sub>left</sub> =	158.17	in <sup>3</sup>
C <sub>right</sub> =	12.2798	in	A =	55.4358	in <sup>2</sup>	C <sub>right</sub> =	12.2798	in	A =	55.4358	in <sup>2</sup>
C <sub>left</sub> =	9.7822	in	r <sub>y</sub> =	5.2830	in	C <sub>left</sub> =	9.7822	in	r <sub>y</sub> =	5.2830	in



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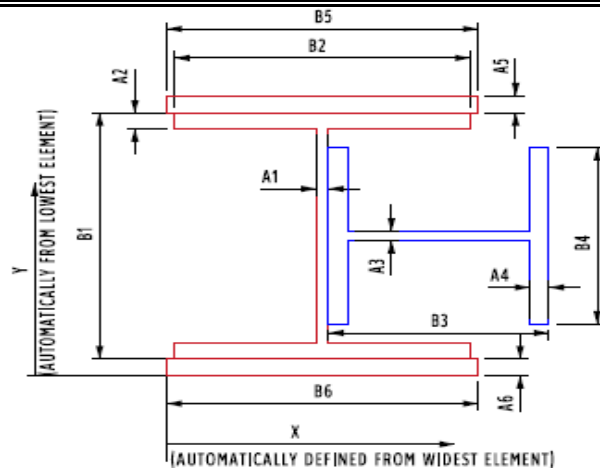
Date 3/12/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	CB16x114	<b>Top Cover Plate</b>
$A_1 = t_w = 0.6310$ in		$A_5 = t = 0.8750$ in
$B_1 = d = 16.6400$ in		$B_5 = b = 16.0000$ in
$A_2 = t_f = 1.0350$ in		<b>Bottom Cover Plate</b>
$B_2 = b_f = 11.6290$ in		$A_6 = t = 0.8750$ in
<b>Rolled Side Section*</b>	WF14x58	$B_6 = b = 16.0000$ in
$A_3 = t_w = 0.4060$ in		
$B_3 = d = 14.0600$ in		
$A_4 = t_f = 0.7180$ in		
$B_4 = b_f = 8.0980$ in		



\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web plate	9.1937	9.1950	84.5358	162.6398	0.0000	0.0000	162.6398
2	Main Top Flange	12.0360	16.9975	204.5822	1.0744	7.8025	732.7406	733.8151
	Main Bottom Flange	12.0360	1.3925	16.7602	1.0744	7.8025	732.7406	733.8151
3	Side Web Plate	5.1253	9.1950	47.1275	0.0704	0.0000	0.0000	0.0704
4	Side Flange Plates	11.6287	9.1950	106.9262	63.5487	0.0000	0.0000	63.5487
5	Top Cover Plate	14.0000	17.9525	251.3350	0.8932	8.7575	1073.7133	1074.6065
6	Bottom Cover Plate	14.0000	0.4375	6.1250	0.8932	8.7575	1073.7133	1074.6065
<b>Total</b>		<b>78.02</b>		<b>717.39</b>	<b>230.19</b>		<b>3612.91</b>	<b>3843.10</b>
Section Losses		A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x,loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	9.1950	in	S <sub>top</sub> = 417.96 in <sup>3</sup>	y-bar =	9.1950	in	S <sub>top</sub> = 417.96 in <sup>3</sup>
I <sub>x</sub> =	3843.10	in <sup>4</sup>	S <sub>bottom</sub> = 417.96 in <sup>3</sup>	I <sub>x</sub> =	3843.10	in <sup>4</sup>	S <sub>bottom</sub> = 417.96 in <sup>3</sup>
C <sub>top</sub> =	9.1950	in	A = 78.0198 in <sup>2</sup>	C <sub>top</sub> =	9.1950	in	A = 78.0198 in <sup>2</sup>
C <sub>bottom</sub> =	9.1950	in	r <sub>x</sub> = 7.0184 in	C <sub>bottom</sub> =	9.1950	in	r <sub>x</sub> = 7.0184 in
			J = 19.24 in <sup>4</sup>				



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

Y-Axis Section Properties:

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate	9.1937	8.0000	73.5494	0.3050	1.5774	22.8751	23.1801
2	Main Flanges	24.0720	8.0000	192.5762	271.2790	1.5774	59.8945	331.1735
3	Side Web Plate	5.1253	15.3455	78.6510	68.0669	5.7681	170.5262	238.5931
4	Side Left Flange	5.8144	8.6745	50.4367	0.2498	0.9029	4.7399	4.9896
	Side Right Flange	5.8144	22.0165	128.0119	0.2498	12.4391	899.6661	899.9159
5	Top Cover Plate	14.0000	8.0000	112.0000	298.6667	1.5774	34.8339	333.5006
6	Bottom Cover Plate	14.0000	8.0000	112.0000	298.6667	1.5774	34.8339	333.5006
<b>Total</b>		<b>78.02</b>		<b>747.23</b>	<b>937.48</b>		<b>1227.37</b>	<b>2164.85</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	9.5774	in	S <sub>right</sub> =	169.15	in <sup>3</sup>	x-bar =	9.5774	in	S <sub>right</sub> =	169.15	in <sup>3</sup>
I <sub>y</sub> =	2164.85	in <sup>4</sup>	S <sub>left</sub> =	226.04	in <sup>3</sup>	I <sub>y</sub> =	2164.85	in <sup>4</sup>	S <sub>left</sub> =	226.04	in <sup>3</sup>
C <sub>right</sub> =	12.7981	in	A =	78.0198	in <sup>2</sup>	C <sub>right</sub> =	12.7981	in	A =	78.0198	in <sup>2</sup>
C <sub>left</sub> =	9.5774	in	r <sub>y</sub> =	5.2676	in	C <sub>left</sub> =	9.5774	in	r <sub>y</sub> =	5.2676	in



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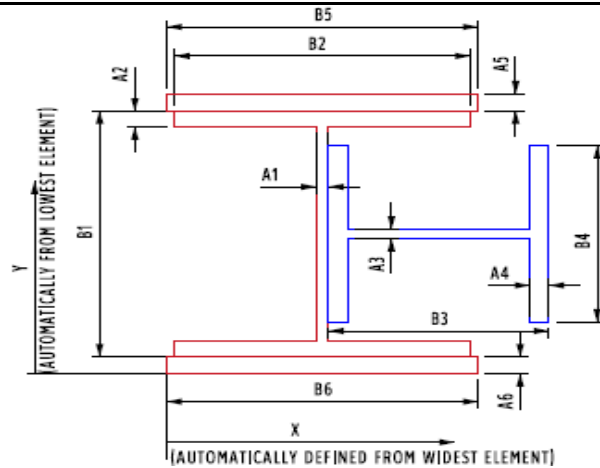
Date 3/13/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	16 5/8B114	<b>Top Cover Plate</b>	
$A_1 = t_w =$	0.6310 in	$A_5 = t =$	1.5000 in
$B_1 = d =$	16.6400 in	$B_5 = b =$	16.0000 in
$A_2 = t_f =$	1.0350 in	<b>Bottom Cover Plate</b>	
$B_2 = b_f =$	11.6290 in	$A_6 = t =$	1.5000 in
<b>Rolled Side Section*</b>	14 1/4B74	$B_6 = b =$	16.0000 in
$A_3 = t_w =$	0.4500 in		
$B_3 = d =$	14.1900 in		
$A_4 = t_f =$	0.7830 in		
$B_4 = b_f =$	10.0720 in		



\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web plate	9.1937	9.8200	90.2818	162.6398	0.0000	0.0000	162.6398
2	Main Top Flange	12.0360	17.6225	212.1047	1.0744	7.8025	732.7406	733.8151
	Main Bottom Flange	12.0360	2.0175	24.2827	1.0744	7.8025	732.7406	733.8151
3	Side Web Plate	5.6808	9.8200	55.7855	0.0959	0.0000	0.0000	0.0959
4	Side Flange Plates	15.7728	9.8200	154.8884	133.3391	0.0000	0.0000	133.3391
5	Top Cover Plate	24.0000	18.8900	453.3600	4.5000	9.0700	1974.3576	1978.8576
6	Bottom Cover Plate	24.0000	0.7500	18.0000	4.5000	9.0700	1974.3576	1978.8576
<b>Total</b>		<b>102.72</b>		<b>1008.70</b>	<b>307.22</b>		<b>5414.20</b>	<b>5721.42</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

**Bent 35 North & South Column**  
**2 Cover Plates**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	9.8200 in	$S_{top} =$	582.63 in <sup>3</sup>	y-bar =	9.8200 in	$S_{top} =$	582.63 in <sup>3</sup>
$I_x =$	5721.42 in <sup>4</sup>	$S_{bott.} =$	582.63 in <sup>3</sup>	$I_x =$	5721.42 in <sup>4</sup>	$S_{bott.} =$	582.63 in <sup>3</sup>
$C_{top} =$	9.8200 in	A =	102.7193 in <sup>2</sup>	$C_{top} =$	9.8200 in	A =	102.7193 in <sup>2</sup>
$C_{bottom} =$	9.8200 in	$r_x =$	7.4632 in	$C_{bottom} =$	9.8200 in	$r_x =$	7.4632 in
		J =	49.42 in <sup>4</sup>				



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate		9.1937	8.0000	73.5494	0.3050	1.5477	22.0231	22.3282
2	Main Flanges		24.0720	8.0000	192.5762	271.2790	1.5477	57.6637	328.9427
3	Side Web Plate		5.6808	15.4105	87.5440	75.4436	5.8628	195.2609	270.7045
4	Side Left Flange		7.8864	8.7070	68.6667	0.4029	0.8407	5.5743	5.9772
	Side Right Flange		7.8864	22.1140	174.3993	0.4029	12.5663	1245.3469	1245.7498
5	Top Cover Plate		24.0000	8.0000	192.0000	512.0000	1.5477	57.4911	569.4911
6	Bottom Cover Plate		24.0000	8.0000	192.0000	512.0000	1.5477	57.4911	569.4911
<b>Total</b>			<b>102.72</b>		<b>980.74</b>	<b>1371.83</b>		<b>1640.85</b>	<b>3012.68</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	9.5477	in	S <sub>right</sub> =	232.50	in <sup>3</sup>	x-bar =	9.5477	in	S <sub>right</sub> =	232.50	in <sup>3</sup>
I <sub>y</sub> =	3012.68	in <sup>4</sup>	S <sub>left</sub> =	315.54	in <sup>3</sup>	I <sub>y</sub> =	3012.68	in <sup>4</sup>	S <sub>left</sub> =	315.54	in <sup>3</sup>
C <sub>right</sub> =	12.9578	in	A =	102.7193	in <sup>2</sup>	C <sub>right</sub> =	12.9578	in	A =	102.7193	in <sup>2</sup>
C <sub>left</sub> =	9.5477	in	r <sub>y</sub> =	5.4157	in	C <sub>left</sub> =	9.5477	in	r <sub>y</sub> =	5.4157	in





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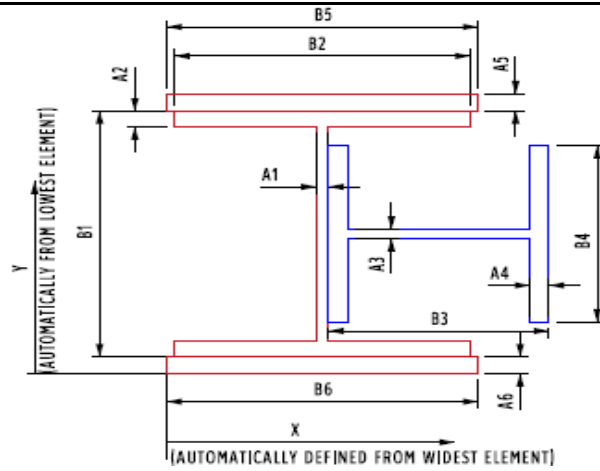
Date 3/13/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	16 5/8B114	<b>Top Cover Plate</b>	
$A_1 = t_w =$	0.6310 in	$A_5 = t =$	2.2500 in
$B_1 = d =$	16.6400 in	$B_5 = b =$	16.0000 in
$A_2 = t_f =$	1.0350 in	<b>Bottom Cover Plate</b>	
$B_2 = b_f =$	11.6290 in	$A_6 = t =$	2.2500 in
<b>Rolled Side Section*</b>	14 1/4B74	$B_6 = b =$	16.0000 in
$A_3 = t_w =$	0.4500 in		
$B_3 = d =$	14.1900 in		
$A_4 = t_f =$	0.7830 in		
$B_4 = b_f =$	10.0720 in		



**Bent 35 North & South Column**  
**3 Cover Plates**

\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web plate	9.1937	10.5700	97.1771	162.6398	0.0000	0.0000	162.6398
2	Main Top Flange	12.0360	18.3725	221.1317	1.0744	7.8025	732.7406	733.8151
	Main Bottom Flange	12.0360	2.7675	33.3097	1.0744	7.8025	732.7406	733.8151
3	Side Web Plate	5.6808	10.5700	60.0461	0.0959	0.0000	0.0000	0.0959
4	Side Flange Plates	15.7728	10.5700	166.7180	133.3391	0.0000	0.0000	133.3391
5	Top Cover Plate	36.0000	20.0150	720.5400	15.1875	9.4450	3211.4889	3226.6764
6	Bottom Cover Plate	36.0000	1.1250	40.5000	15.1875	9.4450	3211.4889	3226.6764
<b>Total</b>		<b>126.72</b>		<b>1339.42</b>	<b>328.60</b>		<b>7888.46</b>	<b>8217.06</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	10.5700 in	$S_{top} =$	777.39 in <sup>3</sup>	y-bar =	10.5700 in	$S_{top} =$	777.39 in <sup>3</sup>
$I_x =$	8217.06 in <sup>4</sup>	$S_{bott.} =$	777.39 in <sup>3</sup>	$I_x =$	8217.06 in <sup>4</sup>	$S_{bott.} =$	777.39 in <sup>3</sup>
$C_{top} =$	10.5700 in	A =	126.7193 in <sup>2</sup>	$C_{top} =$	10.5700 in	A =	126.7193 in <sup>2</sup>
$C_{bottom} =$	10.5700 in	$r_x =$	8.0526 in	$C_{bottom} =$	10.5700 in	$r_x =$	8.0526 in
		J =	134.92 in <sup>4</sup>				



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Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate	9.1937	8.0000	73.5494	0.3050	1.2546	14.4710	14.7760
2	Main Flanges	24.0720	8.0000	192.5762	271.2790	1.2546	37.8897	309.1687
3	Side Web Plate	5.6808	15.4105	87.5440	75.4436	6.1559	215.2747	290.7183
4	Side Left Flange	7.8864	8.7070	68.6667	0.4029	0.5476	2.3648	2.7677
	Side Right Flange	7.8864	22.1140	174.3993	0.4029	12.8594	1304.1247	1304.5276
5	Top Cover Plate	36.0000	8.0000	288.0000	768.0000	1.2546	56.6645	824.6645
6	Bottom Cover Plate	36.0000	8.0000	288.0000	768.0000	1.2546	56.6645	824.6645
<b>Total</b>		<b>126.72</b>		<b>1172.74</b>	<b>1883.83</b>		<b>1687.45</b>	<b>3571.29</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	9.2546	in	S <sub>right</sub> =	269.51	in <sup>3</sup>	x-bar =	9.2546
I <sub>y</sub> =	3571.29	in <sup>4</sup>	S <sub>left</sub> =	385.89	in <sup>3</sup>	I <sub>y</sub> =	3571.29
C <sub>right</sub> =	13.2509	in	A =	126.7193	in <sup>2</sup>	C <sub>right</sub> =	13.2509
C <sub>left</sub> =	9.2546	in	r <sub>y</sub> =	5.3087	in	C <sub>left</sub> =	9.2546



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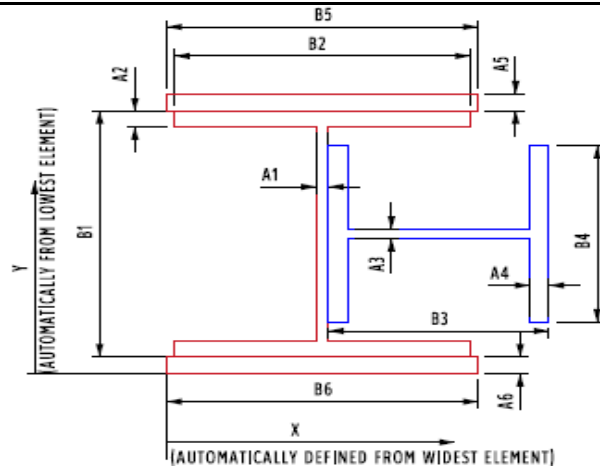
Date 3/13/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	16 5/8B114	<b>Top Cover Plate</b>	
$A_1 = t_w =$	0.6310 in	$A_5 = t =$	3.0000 in
$B_1 = d =$	16.6400 in	$B_5 = b =$	16.0000 in
$A_2 = t_f =$	1.0350 in	<b>Bottom Cover Plate</b>	
$B_2 = b_f =$	11.6290 in	$A_6 = t =$	3.0000 in
<b>Rolled Side Section*</b>	14 1/4B74	$B_6 = b =$	16.0000 in
$A_3 = t_w =$	0.4500 in		
$B_3 = d =$	14.1900 in		
$A_4 = t_f =$	0.7830 in		
$B_4 = b_f =$	10.0720 in		



**Bent 35 North & South Column**  
**4 Cover Plates**

\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web plate	9.1937	11.3200	104.0723	162.6398	0.0000	0.0000	162.6398
2	Main Top Flange	12.0360	19.1225	230.1587	1.0744	7.8025	732.7406	733.8151
	Main Bottom Flange	12.0360	3.5175	42.3367	1.0744	7.8025	732.7406	733.8151
3	Side Web Plate	5.6808	11.3200	64.3067	0.0959	0.0000	0.0000	0.0959
4	Side Flange Plates	15.7728	11.3200	178.5476	133.3391	0.0000	0.0000	133.3391
5	Top Cover Plate	48.0000	21.1400	1014.7200	36.0000	9.8200	4628.7552	4664.7552
6	Bottom Cover Plate	48.0000	1.5000	72.0000	36.0000	9.8200	4628.7552	4664.7552
<b>Total</b>		<b>150.72</b>		<b>1706.14</b>	<b>370.22</b>		<b>10722.99</b>	<b>11093.22</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	11.3200 in	$S_{top} =$	979.97 in <sup>3</sup>	y-bar =	11.3200 in	$S_{top} =$	979.97 in <sup>3</sup>
$I_x =$	11093.22 in <sup>4</sup>	$S_{bott.} =$	979.97 in <sup>3</sup>	$I_x =$	11093.22 in <sup>4</sup>	$S_{bott.} =$	979.97 in <sup>3</sup>
$C_{top} =$	11.3200 in	A =	150.7193 in <sup>2</sup>	$C_{top} =$	11.3200 in	A =	150.7193 in <sup>2</sup>
$C_{bottom} =$	11.3200 in	$r_x =$	8.5792 in	$C_{bottom} =$	11.3200 in	$r_x =$	8.5792 in
		J =	301.42 in <sup>4</sup>				



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

Y-Axis Section Properties:

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate	9.1937	8.0000	73.5494	0.3050	1.0548	10.2293	10.5343
2	Main Flanges	24.0720	8.0000	192.5762	271.2790	1.0548	26.7836	298.0626
3	Side Web Plate	5.6808	15.4105	87.5440	75.4436	6.3557	229.4741	304.9177
4	Side Left Flange	7.8864	8.7070	68.6667	0.4029	0.3478	0.9541	1.3570
	Side Right Flange	7.8864	22.1140	174.3993	0.4029	13.0592	1344.9600	1345.3629
5	Top Cover Plate	48.0000	8.0000	384.0000	1024.0000	1.0548	53.4069	1077.4069
6	Bottom Cover Plate	48.0000	8.0000	384.0000	1024.0000	1.0548	53.4069	1077.4069
<b>Total</b>		<b>150.72</b>		<b>1364.74</b>	<b>2395.83</b>		<b>1719.21</b>	<b>4115.05</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	9.0548	in	S <sub>right</sub> =	305.94	in <sup>3</sup>	x-bar =	9.0548	in	S <sub>right</sub> =	305.94	in <sup>3</sup>
I <sub>y</sub> =	4115.05	in <sup>4</sup>	S <sub>left</sub> =	454.46	in <sup>3</sup>	I <sub>y</sub> =	4115.05	in <sup>4</sup>	S <sub>left</sub> =	454.46	in <sup>3</sup>
C <sub>right</sub> =	13.4507	in	A =	150.7193	in <sup>2</sup>	C <sub>right</sub> =	13.4507	in	A =	150.7193	in <sup>2</sup>
C <sub>left</sub> =	9.0548	in	r <sub>y</sub> =	5.2252	in	C <sub>left</sub> =	9.0548	in	r <sub>y</sub> =	5.2252	in



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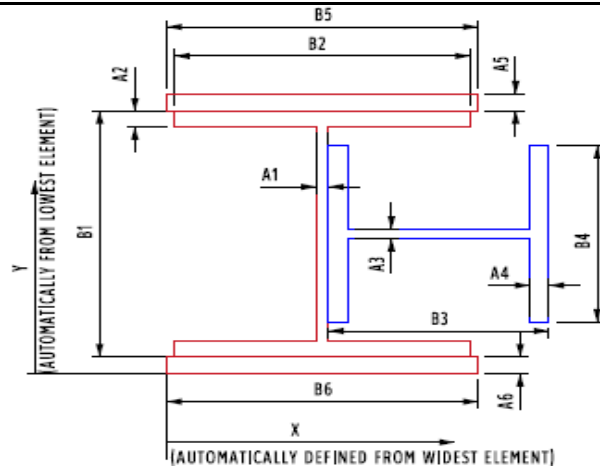
Date 3/13/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	16 5/8B114	<b>Top Cover Plate</b>	
$A_1 = t_w =$	0.6310 in	$A_5 = t =$	1.5000 in
$B_1 = d =$	16.6400 in	$B_5 = b =$	16.0000 in
$A_2 = t_f =$	1.0350 in	<b>Bottom Cover Plate</b>	
$B_2 = b_f =$	11.6290 in	$A_6 = t =$	1.5000 in
<b>Rolled Side Section*</b>	14 1/4B74	$B_6 = b =$	16.0000 in
$A_3 = t_w =$	0.4500 in		
$B_3 = d =$	14.1900 in		
$A_4 = t_f =$	0.7830 in		
$B_4 = b_f =$	10.0720 in		



\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web plate	9.1937	9.8200	90.2818	162.6398	0.0000	0.0000	162.6398
2	Main Top Flange	12.0360	17.6225	212.1047	1.0744	7.8025	732.7406	733.8151
	Main Bottom Flange	12.0360	2.0175	24.2827	1.0744	7.8025	732.7406	733.8151
3	Side Web Plate	5.6808	9.8200	55.7855	0.0959	0.0000	0.0000	0.0959
4	Side Flange Plates	15.7728	9.8200	154.8884	133.3391	0.0000	0.0000	133.3391
5	Top Cover Plate	24.0000	18.8900	453.3600	4.5000	9.0700	1974.3576	1978.8576
6	Bottom Cover Plate	24.0000	0.7500	18.0000	4.5000	9.0700	1974.3576	1978.8576
<b>Total</b>		<b>102.72</b>		<b>1008.70</b>	<b>307.22</b>		<b>5414.20</b>	<b>5721.42</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x,loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

**Bent 36 North & South Column**  
**2 Cover Plates**

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	9.8200 in	$S_{top} =$	582.63 in <sup>3</sup>	y-bar =	9.8200 in	$S_{top} =$	582.63 in <sup>3</sup>
$I_x =$	5721.42 in <sup>4</sup>	$S_{bott.} =$	582.63 in <sup>3</sup>	$I_x =$	5721.42 in <sup>4</sup>	$S_{bott.} =$	582.63 in <sup>3</sup>
$C_{top} =$	9.8200 in	A =	102.7193 in <sup>2</sup>	$C_{top} =$	9.8200 in	A =	102.7193 in <sup>2</sup>
$C_{bottom} =$	9.8200 in	$r_x =$	7.4632 in	$C_{bottom} =$	9.8200 in	$r_x =$	7.4632 in
		J =	49.42 in <sup>4</sup>				



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

Y-Axis Section Properties:

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate	9.1937	8.0000	73.5494	0.3050	1.5477	22.0231	22.3282
2	Main Flanges	24.0720	8.0000	192.5762	271.2790	1.5477	57.6637	328.9427
3	Side Web Plate	5.6808	15.4105	87.5440	75.4436	5.8628	195.2609	270.7045
4	Side Left Flange	7.8864	8.7070	68.6667	0.4029	0.8407	5.5743	5.9772
	Side Right Flange	7.8864	22.1140	174.3993	0.4029	12.5663	1245.3469	1245.7498
5	Top Cover Plate	24.0000	8.0000	192.0000	512.0000	1.5477	57.4911	569.4911
6	Bottom Cover Plate	24.0000	8.0000	192.0000	512.0000	1.5477	57.4911	569.4911
<b>Total</b>		<b>102.72</b>		<b>980.74</b>	<b>1371.83</b>		<b>1640.85</b>	<b>3012.68</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	9.5477 in	S <sub>right</sub> =	232.50 in <sup>3</sup>	x-bar =	9.5477 in	S <sub>right</sub> =	232.50 in <sup>3</sup>
I <sub>y</sub> =	3012.68 in <sup>4</sup>	S <sub>left</sub> =	315.54 in <sup>3</sup>	I <sub>y</sub> =	3012.68 in <sup>4</sup>	S <sub>left</sub> =	315.54 in <sup>3</sup>
C <sub>right</sub> =	12.9578 in	A =	102.7193 in <sup>2</sup>	C <sub>right</sub> =	12.9578 in	A =	102.7193 in <sup>2</sup>
C <sub>left</sub> =	9.5477 in	r <sub>y</sub> =	5.4157 in	C <sub>left</sub> =	9.5477 in	r <sub>y</sub> =	5.4157 in



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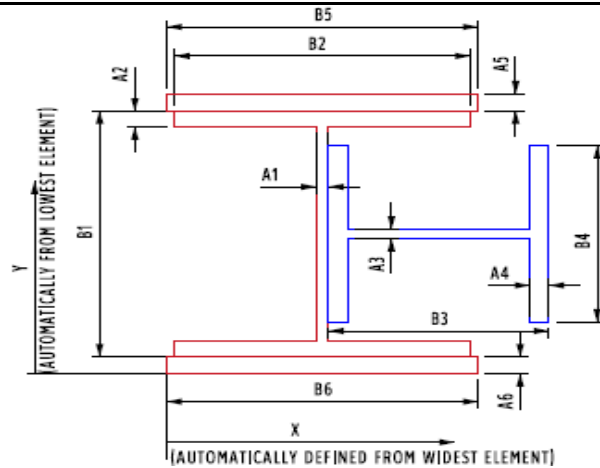
Date 3/13/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	16 5/8B114	<b>Top Cover Plate</b>	
$A_1 = t_w =$	0.6310 in	$A_5 = t =$	2.2500 in
$B_1 = d =$	16.6400 in	$B_5 = b =$	16.0000 in
$A_2 = t_f =$	1.0350 in	<b>Bottom Cover Plate</b>	
$B_2 = b_f =$	11.6290 in	$A_6 = t =$	2.2500 in
<b>Rolled Side Section*</b>	14 1/4B74	$B_6 = b =$	16.0000 in
$A_3 = t_w =$	0.4500 in		
$B_3 = d =$	14.1900 in		
$A_4 = t_f =$	0.7830 in		
$B_4 = b_f =$	10.0720 in		



**Bent 36 North & South Column**  
**3 Cover Plates**

\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web plate	9.1937	10.5700	97.1771	162.6398	0.0000	0.0000	162.6398
2	Main Top Flange	12.0360	18.3725	221.1317	1.0744	7.8025	732.7406	733.8151
	Main Bottom Flange	12.0360	2.7675	33.3097	1.0744	7.8025	732.7406	733.8151
3	Side Web Plate	5.6808	10.5700	60.0461	0.0959	0.0000	0.0000	0.0959
4	Side Flange Plates	15.7728	10.5700	166.7180	133.3391	0.0000	0.0000	133.3391
5	Top Cover Plate	36.0000	20.0150	720.5400	15.1875	9.4450	3211.4889	3226.6764
6	Bottom Cover Plate	36.0000	1.1250	40.5000	15.1875	9.4450	3211.4889	3226.6764
<b>Total</b>		<b>126.72</b>		<b>1339.42</b>	<b>328.60</b>		<b>7888.46</b>	<b>8217.06</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	10.5700 in	$S_{top} =$	777.39 in <sup>3</sup>	y-bar =	10.5700 in	$S_{top} =$	777.39 in <sup>3</sup>
$I_x =$	8217.06 in <sup>4</sup>	$S_{bott.} =$	777.39 in <sup>3</sup>	$I_x =$	8217.06 in <sup>4</sup>	$S_{bott.} =$	777.39 in <sup>3</sup>
$C_{top} =$	10.5700 in	A =	126.7193 in <sup>2</sup>	$C_{top} =$	10.5700 in	A =	126.7193 in <sup>2</sup>
$C_{bottom} =$	10.5700 in	$r_x =$	8.0526 in	$C_{bottom} =$	10.5700 in	$r_x =$	8.0526 in
		J =	134.92 in <sup>4</sup>				



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Y-Axis Section Properties:**

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate	9.1937	8.0000	73.5494	0.3050	1.2546	14.4710	14.7760
2	Main Flanges	24.0720	8.0000	192.5762	271.2790	1.2546	37.8897	309.1687
3	Side Web Plate	5.6808	15.4105	87.5440	75.4436	6.1559	215.2747	290.7183
4	Side Left Flange	7.8864	8.7070	68.6667	0.4029	0.5476	2.3648	2.7677
	Side Right Flange	7.8864	22.1140	174.3993	0.4029	12.8594	1304.1247	1304.5276
5	Top Cover Plate	36.0000	8.0000	288.0000	768.0000	1.2546	56.6645	824.6645
6	Bottom Cover Plate	36.0000	8.0000	288.0000	768.0000	1.2546	56.6645	824.6645
<b>Total</b>		<b>126.72</b>		<b>1172.74</b>	<b>1883.83</b>		<b>1687.45</b>	<b>3571.29</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
x-bar =	9.2546	in	S <sub>right</sub> =	269.51	in <sup>3</sup>	x-bar =	9.2546
I <sub>y</sub> =	3571.29	in <sup>4</sup>	S <sub>left</sub> =	385.89	in <sup>3</sup>	I <sub>y</sub> =	3571.29
C <sub>right</sub> =	13.2509	in	A =	126.7193	in <sup>2</sup>	C <sub>right</sub> =	13.2509
C <sub>left</sub> =	9.2546	in	r <sub>y</sub> =	5.3087	in	C <sub>left</sub> =	9.2546





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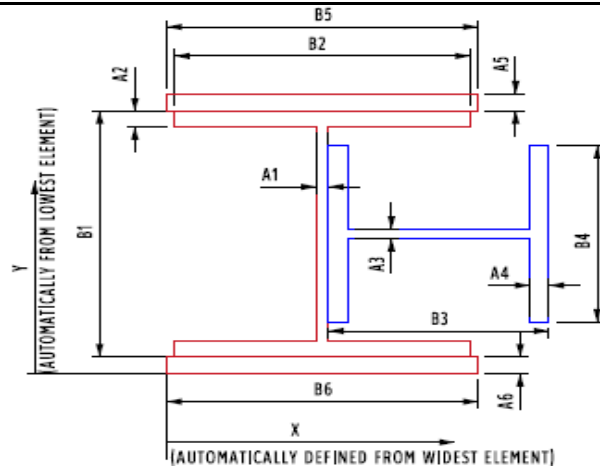
Date 3/13/2012  
Date 3/22/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

<b>Rolled Main Section*</b>	16 5/8B114	<b>Top Cover Plate</b>	
$A_1 = t_w =$	0.6310 in	$A_5 = t =$	3.0000 in
$B_1 = d =$	16.6400 in	$B_5 = b =$	16.0000 in
$A_2 = t_f =$	1.0350 in	<b>Bottom Cover Plate</b>	
$B_2 = b_f =$	11.6290 in	$A_6 = t =$	3.0000 in
<b>Rolled Side Section*</b>	14 1/4B74	$B_6 = b =$	16.0000 in
$A_3 = t_w =$	0.4500 in		
$B_3 = d =$	14.1900 in		
$A_4 = t_f =$	0.7830 in		
$B_4 = b_f =$	10.0720 in		



**Bent 36 North & South Column**  
**4 Cover Plates**

\*Select sections from dropdown list

Side beam is assumed centered on main beam's web

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web plate	9.1937	11.3200	104.0723	162.6398	0.0000	0.0000	162.6398
2	Main Top Flange	12.0360	19.1225	230.1587	1.0744	7.8025	732.7406	733.8151
	Main Bottom Flange	12.0360	3.5175	42.3367	1.0744	7.8025	732.7406	733.8151
3	Side Web Plate	5.6808	11.3200	64.3067	0.0959	0.0000	0.0000	0.0959
4	Side Flange Plates	15.7728	11.3200	178.5476	133.3391	0.0000	0.0000	133.3391
5	Top Cover Plate	48.0000	21.1400	1014.7200	36.0000	9.8200	4628.7552	4664.7552
6	Bottom Cover Plate	48.0000	1.5000	72.0000	36.0000	9.8200	4628.7552	4664.7552
<b>Total</b>		<b>150.72</b>		<b>1706.14</b>	<b>370.22</b>		<b>10722.99</b>	<b>11093.22</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	11.3200 in	$S_{top} =$	979.97 in <sup>3</sup>	y-bar =	11.3200 in	$S_{top} =$	979.97 in <sup>3</sup>
$I_x =$	11093.22 in <sup>4</sup>	$S_{bott.} =$	979.97 in <sup>3</sup>	$I_x =$	11093.22 in <sup>4</sup>	$S_{bott.} =$	979.97 in <sup>3</sup>
$C_{top} =$	11.3200 in	A =	150.7193 in <sup>2</sup>	$C_{top} =$	11.3200 in	A =	150.7193 in <sup>2</sup>
$C_{bottom} =$	11.3200 in	$r_x =$	8.5792 in	$C_{bottom} =$	11.3200 in	$r_x =$	8.5792 in
		J =	301.42 in <sup>4</sup>				



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Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

Y-Axis Section Properties:

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Main Web Plate	9.1937	8.0000	73.5494	0.3050	1.0548	10.2293	10.5343
2	Main Flanges	24.0720	8.0000	192.5762	271.2790	1.0548	26.7836	298.0626
3	Side Web Plate	5.6808	15.4105	87.5440	75.4436	6.3557	229.4741	304.9177
4	Side Left Flange	7.8864	8.7070	68.6667	0.4029	0.3478	0.9541	1.3570
	Side Right Flange	7.8864	22.1140	174.3993	0.4029	13.0592	1344.9600	1345.3629
5	Top Cover Plate	48.0000	8.0000	384.0000	1024.0000	1.0548	53.4069	1077.4069
6	Bottom Cover Plate	48.0000	8.0000	384.0000	1024.0000	1.0548	53.4069	1077.4069
<b>Total</b>		<b>150.72</b>		<b>1364.74</b>	<b>2395.83</b>		<b>1719.21</b>	<b>4115.05</b>
Section Losses		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	9.0548	in	S <sub>right</sub> =	305.94	in <sup>3</sup>	x-bar =	9.0548	in	S <sub>right</sub> =	305.94	in <sup>3</sup>
I <sub>y</sub> =	4115.05	in <sup>4</sup>	S <sub>left</sub> =	454.46	in <sup>3</sup>	I <sub>y</sub> =	4115.05	in <sup>4</sup>	S <sub>left</sub> =	454.46	in <sup>3</sup>
C <sub>right</sub> =	13.4507	in	A =	150.7193	in <sup>2</sup>	C <sub>right</sub> =	13.4507	in	A =	150.7193	in <sup>2</sup>
C <sub>left</sub> =	9.0548	in	r <sub>y</sub> =	5.2252	in	C <sub>left</sub> =	9.0548	in	r <sub>y</sub> =	5.2252	in

CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

Bent 14 North Column (4C1)

Section Properties (see section properties spreadsheet)

A = 76.850 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 3859.656 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 457.305 in <sup>3</sup>	L <sub>c</sub> = 119.38 in
r <sub>x</sub> = 7.087 in	K = 0.650 AASHTO Appendix C
I <sub>y</sub> = 1451.850 in <sup>4</sup>	
S <sub>y</sub> = 175.982 in <sup>3</sup>	
r <sub>y</sub> = 4.346 in	

Axial Loading AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right) \quad \text{For: } \frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2} \quad \text{For: } \frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$$

r<sub>y</sub> = 17.852 < 131.706  
 r<sub>x</sub> = 10.949 < 131.706

F<sub>CR</sub> = 32.697 ksi

P<sub>u</sub> = 2135.8 k

Axial Loading and Bending AASHTO 10.54.2 Combined Axial Load and Bending

$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2} \quad F_{ex} = 2387.534 \text{ ksi}$$

$$F_{ey} = 898.096 \text{ ksi}$$

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

M<sub>ux</sub> = 15091.1 k-ft

CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

Bent 14 South Column (4C2)

Section Properties (see section properties spreadsheet)

A = 76.850 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 3859.656 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 457.305 in <sup>3</sup>	L <sub>c</sub> = 120.19 in
r <sub>x</sub> = 7.087 in	K = 0.650 AASHTO Appendix C
I <sub>y</sub> = 1451.850 in <sup>4</sup>	
S <sub>y</sub> = 175.982 in <sup>3</sup>	
r <sub>y</sub> = 4.346 in	

Axial Loading AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right) \quad \text{For: } \frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2} \quad \text{For: } \frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$$

r <sub>y</sub> = 17.974	<	131.706
r <sub>x</sub> = 11.024	<	131.706

F<sub>CR</sub> = 32.693 ksi

$P_u = 2135.6 \text{ k}$

Axial Loading and Bending AASHTO 10.54.2 Combined Axial Load and Bending

$$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2} \quad \begin{matrix} F_{ex} = 2355.362 \text{ ksi} \\ F_{ey} = 885.994 \text{ ksi} \end{matrix}$$

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

$M_{ux} = 15091.1 \text{ k-ft}$

CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

Bent 15 North Column (5C1)

Section Properties (see section properties spreadsheet)

A = 67.398 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 2949.678 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 334.431 in <sup>3</sup>	L <sub>c</sub> = 131.13 in
r <sub>x</sub> = 6.616 in	K = 0.650 AASHTO Appendix C
I <sub>y</sub> = 1963.823 in <sup>4</sup>	
S <sub>y</sub> = 159.356 in <sup>3</sup>	
r <sub>y</sub> = 5.398 in	

Axial Loading AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right) \quad \text{For: } \frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2} \quad \text{For: } \frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$$

r<sub>y</sub> = 15.790 < 131.706  
 r<sub>x</sub> = 12.883 < 131.706

F<sub>CR</sub> = 32.763 ksi

P<sub>u</sub> = 1876.9 k

Axial Loading and Bending AASHTO 10.54.2 Combined Axial Load and Bending

$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2} \quad F_{ex} = 1724.370 \text{ ksi}$$

$$F_{ey} = 1148.043 \text{ ksi}$$

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

M<sub>ux</sub> = 11036.2 k-ft

CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

Bent 15 South Column (6C1)

Section Properties (see section properties spreadsheet)

A = 67.398 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 2949.678 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 334.431 in <sup>3</sup>	L <sub>c</sub> = 133.81 in
r <sub>x</sub> = 6.616 in	K = 0.650 AASHTO Appendix C
I <sub>y</sub> = 1963.823 in <sup>4</sup>	
S <sub>y</sub> = 159.356 in <sup>3</sup>	
r <sub>y</sub> = 5.398 in	

Axial Loading AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right)$$

For:  $\frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2}$$

For:  $\frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$

r<sub>y</sub> = 16.113 < 131.706  
 r<sub>x</sub> = 13.148 < 131.706

F<sub>CR</sub> = 32.753 ksi

P<sub>u</sub> = 1876.4 k

Axial Loading and Bending AASHTO 10.54.2 Combined Axial Load and Bending

$$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2}$$

F<sub>ex</sub> = 1655.801 ksi  
 F<sub>ey</sub> = 1102.391 ksi

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

M<sub>ux</sub> = 11036.2 k-ft

CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

Bent 16 North Column (7C1)

Section Properties (see section properties spreadsheet)

A = 67.398 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 2949.678 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 334.431 in <sup>3</sup>	L <sub>c</sub> = 133.56 in
r <sub>x</sub> = 6.616 in	K = 0.650 AASHTO Appendix C
I <sub>y</sub> = 1963.823 in <sup>4</sup>	
S <sub>y</sub> = 159.356 in <sup>3</sup>	
r <sub>y</sub> = 5.398 in	

Axial Loading AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right) \quad \text{For: } \frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2} \quad \text{For: } \frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$$

r <sub>y</sub> = 16.083	<	131.706
r <sub>x</sub> = 13.123	<	131.706

F<sub>CR</sub> = 32.754 ksi

$P_u = 1876.4 \text{ k}$

Axial Loading and Bending AASHTO 10.54.2 Combined Axial Load and Bending

$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2} \quad \begin{matrix} F_{ex} = 1662.005 \text{ ksi} \\ F_{ey} = 1106.522 \text{ ksi} \end{matrix}$$

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

$M_{ux} = 11036.2 \text{ k-ft}$

CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

Bent 16 South Column (8C1)

Section Properties (see section properties spreadsheet)

A = 67.398 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 2949.678 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 334.431 in <sup>3</sup>	L <sub>c</sub> = 138.63 in
r <sub>x</sub> = 6.616 in	K = 0.650 AASHTO Appendix C
I <sub>y</sub> = 1963.823 in <sup>4</sup>	
S <sub>y</sub> = 159.356 in <sup>3</sup>	
r <sub>y</sub> = 5.398 in	

Axial Loading AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right) \quad \text{For: } \frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2} \quad \text{For: } \frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$$

r <sub>y</sub> = 16.693	<	131.706
r <sub>x</sub> = 13.620	<	131.706

F<sub>CR</sub> = 32.735 ksi

P<sub>u</sub> = 1875.3 k

Axial Loading and Bending AASHTO 10.54.2 Combined Axial Load and Bending

$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2} \quad \begin{matrix} F_{ex} = 1542.831 \text{ ksi} \\ F_{ey} = 1027.179 \text{ ksi} \end{matrix}$$

Column Moment Capacity  
 M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

M<sub>ux</sub> = 11036.2 k-ft



CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

Bent 17 North Column (9C1)

Section Properties (see section properties spreadsheet)

A = 67.398 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 2949.678 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 334.431 in <sup>3</sup>	L <sub>c</sub> = 145.25 in
r <sub>x</sub> = 6.616 in	K = 0.650 AASHTO Appendix C
I <sub>y</sub> = 1963.823 in <sup>4</sup>	
S <sub>y</sub> = 159.356 in <sup>3</sup>	
r <sub>y</sub> = 5.398 in	

Axial Loading AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right) \quad \text{For: } \frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2} \quad \text{For: } \frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$$

r <sub>y</sub> = 17.490	<	131.706
r <sub>x</sub> = 14.271	<	131.706

F<sub>CR</sub> = 32.709 ksi

$P_u = 1873.8 \text{ k}$

Axial Loading and Bending AASHTO 10.54.2 Combined Axial Load and Bending

$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2} \quad \begin{matrix} F_{ex} = 1405.300 \text{ ksi} \\ F_{ey} = 935.614 \text{ ksi} \end{matrix}$$

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

$M_{ux} = 11036.2 \text{ k-ft}$

CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

Bent 17 South Column (10C1)

Section Properties (see section properties spreadsheet)

A = 67.398 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 2949.678 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 334.431 in <sup>3</sup>	L <sub>c</sub> = 155.69 in
r <sub>x</sub> = 6.616 in	K = 0.650 AASHTO Appendix C
I <sub>y</sub> = 1963.823 in <sup>4</sup>	
S <sub>y</sub> = 159.356 in <sup>3</sup>	
r <sub>y</sub> = 5.398 in	

Axial Loading AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right) \quad \text{For: } \frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2} \quad \text{For: } \frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$$

r<sub>y</sub> = 18.747 < 131.706  
 r<sub>x</sub> = 15.297 < 131.706

F<sub>CR</sub> = 32.666 ksi

P<sub>u</sub> = 1871.4 k

Axial Loading and Bending AASHTO 10.54.2 Combined Axial Load and Bending

$$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2} \quad \begin{matrix} F_{ex} = 1223.190 \text{ ksi} \\ F_{ey} = 814.370 \text{ ksi} \end{matrix}$$

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

M<sub>ux</sub> = 11036.2 k-ft

CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

Bent 18 North Column (66C1)

Section Properties (see section properties spreadsheet)

A = 59.436 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 2670.818 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 306.814 in <sup>3</sup>	L <sub>c</sub> = 145.94 in
r <sub>x</sub> = 6.703 in	K = 0.650 AASHTO Appendix C
I <sub>y</sub> = 1644.391 in <sup>4</sup>	
S <sub>y</sub> = 132.615 in <sup>3</sup>	
r <sub>y</sub> = 5.260 in	

Axial Loading AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right) \quad \text{For: } \frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2} \quad \text{For: } \frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$$

r<sub>y</sub> = 18.034 < 131.706  
 r<sub>x</sub> = 14.151 < 131.706

F<sub>CR</sub> = 32.691 ksi

P<sub>u</sub> = 1651.5 k

Axial Loading and Bending AASHTO 10.54.2 Combined Axial Load and Bending

$$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2} \quad F_{ex} = 1429.334 \text{ ksi}$$

$$F_{ey} = 880.024 \text{ ksi}$$

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

M<sub>ux</sub> = 10124.9 k-ft

CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

Bent 18 South Column (67C1)

Section Properties (see section properties spreadsheet)

A = 59.436 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 2670.818 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 306.814 in <sup>3</sup>	L <sub>c</sub> = 157.31 in
r <sub>x</sub> = 6.703 in	K = 0.650 AASHTO Appendix C
I <sub>y</sub> = 1644.391 in <sup>4</sup>	
S <sub>y</sub> = 132.615 in <sup>3</sup>	
r <sub>y</sub> = 5.260 in	

Axial Loading AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right) \quad \text{For: } \frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2} \quad \text{For: } \frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$$

r<sub>y</sub> = 19.440 < 131.706  
 r<sub>x</sub> = 15.254 < 131.706

F<sub>CR</sub> = 32.641 ksi

$P_u = 1649.0 \text{ k}$

Axial Loading and Bending AASHTO 10.54.2 Combined Axial Load and Bending

$$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2} \quad F_{ex} = 1230.102 \text{ ksi}$$

$$F_{ey} = 757.359 \text{ ksi}$$

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

$M_{ux} = 10124.9 \text{ k-ft}$

CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

Bent 19 North Column (68C1)

Section Properties (see section properties spreadsheet)

A = 59.436 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 2670.818 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 306.814 in <sup>3</sup>	L <sub>c</sub> = 151.00 in
r <sub>x</sub> = 6.703 in	K = 0.650 AASHTO Appendix C
I <sub>y</sub> = 1644.391 in <sup>4</sup>	
S <sub>y</sub> = 132.615 in <sup>3</sup>	
r <sub>y</sub> = 5.260 in	

Axial Loading AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right) \quad \text{For: } \frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2} \quad \text{For: } \frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$$

r <sub>y</sub> = 18.660	<	131.706
r <sub>x</sub> = 14.642	<	131.706

F<sub>CR</sub> = 32.669 ksi

$P_u = 1650.4 \text{ k}$

Axial Loading and Bending AASHTO 10.54.2 Combined Axial Load and Bending

$$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2} \quad \begin{matrix} F_{ex} = 1335.100 \text{ ksi} \\ F_{ey} = 822.005 \text{ ksi} \end{matrix}$$

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

$M_{ux} = 10124.9 \text{ k-ft}$

CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

Bent 19 South Column (69C1)

Section Properties (see section properties spreadsheet)

A = 59.436 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 2670.818 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 306.814 in <sup>3</sup>	L <sub>c</sub> = 162.38 in
r <sub>x</sub> = 6.703 in	K = 0.650 AASHTO Appendix C
I <sub>y</sub> = 1644.391 in <sup>4</sup>	
S <sub>y</sub> = 132.615 in <sup>3</sup>	
r <sub>y</sub> = 5.260 in	

Axial Loading

AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right)$$

For:  $\frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2}$$

For:  $\frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$

r<sub>y</sub> = 20.066 < 131.706  
 r<sub>x</sub> = 15.745 < 131.706

F<sub>CR</sub> = 32.617 ksi

P<sub>u</sub> = 1647.8 k

Axial Loading and Bending

AASHTO 10.54.2 Combined Axial Load and Bending

$$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2}$$

F<sub>ex</sub> = 1154.594 ksi  
 F<sub>ey</sub> = 710.870 ksi

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

M<sub>ux</sub> = 10124.9 k-ft

CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

Bent 20 North Column (79C1)

Section Properties (see section properties spreadsheet)

A = 84.960 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 4243.479 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 455.309 in <sup>3</sup>	L <sub>c</sub> = 148.56 in
r <sub>x</sub> = 7.067 in	K = 0.800 AASHTO Appendix C
I <sub>y</sub> = 2482.864 in <sup>4</sup>	
S <sub>y</sub> = 195.921 in <sup>3</sup>	
r <sub>y</sub> = 5.406 in	

Axial Loading AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right) \quad \text{For: } \frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2} \quad \text{For: } \frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$$

r<sub>y</sub> = 21.985 < 131.706  
 r<sub>x</sub> = 16.817 < 131.706

F<sub>CR</sub> = 32.540 ksi

P<sub>u</sub> = 2349.9 k

Axial Loading and Bending AASHTO 10.54.2 Combined Axial Load and Bending

$$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2} \quad F_{ex} = 1012.062 \text{ ksi}$$

$$F_{ey} = 592.158 \text{ ksi}$$

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

M<sub>ux</sub> = 15025.2 k-ft

CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

Bent 20 South Column (80C1)

Section Properties (see section properties spreadsheet)

A = 78.719 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 3579.303 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 394.631 in <sup>3</sup>	L <sub>c</sub> = 161.44 in
r <sub>x</sub> = 6.743 in	K = 0.800 AASHTO Appendix C
I <sub>y</sub> = 2425.666 in <sup>4</sup>	
S <sub>y</sub> = 194.272 in <sup>3</sup>	
r <sub>y</sub> = 5.551 in	

Axial Loading AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right) \quad \text{For: } \frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2} \quad \text{For: } \frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$$

r <sub>y</sub> = 23.266	<	131.706
r <sub>x</sub> = 19.153	<	131.706

F<sub>CR</sub> = 32.485 ksi

$P_u = 2173.6 \text{ k}$

Axial Loading and Bending AASHTO 10.54.2 Combined Axial Load and Bending

$$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2} \quad \begin{matrix} F_{ex} = 780.237 \text{ ksi} \\ F_{ey} = 528.760 \text{ ksi} \end{matrix}$$

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

$M_{ux} = 13022.8 \text{ k-ft}$



CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

Bent 21 North Column (112C1)

Section Properties (see section properties spreadsheet)

A = 82.020 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 4185.912 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 449.132 in <sup>3</sup>	L <sub>c</sub> = 148.44 in
r <sub>x</sub> = 7.144 in	K = 0.650 AASHTO Appendix C
I <sub>y</sub> = 2259.654 in <sup>4</sup>	
S <sub>y</sub> = 175.506 in <sup>3</sup>	
r <sub>y</sub> = 5.249 in	

Axial Loading AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right) \quad \text{For: } \frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2} \quad \text{For: } \frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$$

r <sub>y</sub> = 18.382	<	131.706
r <sub>x</sub> = 13.506	<	131.706

F<sub>CR</sub> = 32.679 ksi

$P_u = 2278.2 \text{ k}$

Axial Loading and Bending AASHTO 10.54.2 Combined Axial Load and Bending

$$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2} \quad \begin{matrix} F_{ex} = 1569.117 \text{ ksi} \\ F_{ey} = 847.046 \text{ ksi} \end{matrix}$$

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

$M_{ux} = 14821.4 \text{ k-ft}$

CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

Bent 21 South Column (113C1)

Section Properties (see section properties spreadsheet)

A = 94.719 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 4969.434 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 519.272 in <sup>3</sup>	L <sub>c</sub> = 180.13 in
r <sub>x</sub> = 7.243 in	K = 0.650 AASHTO Appendix C
I <sub>y</sub> = 2821.236 in <sup>4</sup>	
S <sub>y</sub> = 219.944 in <sup>3</sup>	
r <sub>y</sub> = 5.458 in	

Axial Loading

AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right)$$

For:  $\frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2}$$

For:  $\frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$

r <sub>y</sub> = 21.453	<	131.706
r <sub>x</sub> = 16.164	<	131.706

F<sub>CR</sub> = 32.562 ksi

P<sub>u</sub> = 2621.6 k

Axial Loading and Bending

AASHTO 10.54.2 Combined Axial Load and Bending

$$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2}$$

F<sub>ex</sub> = 1095.448 ksi  
 F<sub>ey</sub> = 621.905 ksi

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

M<sub>ux</sub> = 17136.0 k-ft

CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

Bent 22 North Column (114C1)

Section Properties (see section properties spreadsheet)

A = 76.960 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 3567.053 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 393.280 in <sup>3</sup>	L <sub>c</sub> = 165.00 in
r <sub>x</sub> = 6.808 in	K = 0.650 AASHTO Appendix C
I <sub>y</sub> = 2286.592 in <sup>4</sup>	
S <sub>y</sub> = 182.989 in <sup>3</sup>	
r <sub>y</sub> = 5.451 in	

Axial Loading

AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right)$$

For:  $\frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2}$$

For:  $\frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$

r <sub>y</sub> = 19.676	<	131.706
r <sub>x</sub> = 15.753	<	131.706

F<sub>CR</sub> = 32.632 ksi

P<sub>u</sub> = 2134.6 k

Axial Loading and Bending

AASHTO 10.54.2 Combined Axial Load and Bending

$$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2}$$

F<sub>ex</sub> = 1153.315 ksi  
 F<sub>ey</sub> = 739.310 ksi

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

M<sub>ux</sub> = 12978.3 k-ft

CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

Bent 22 South Column (115C1)

Section Properties (see section properties spreadsheet)

A = 98.719 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 5340.580 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 550.859 in <sup>3</sup>	L <sub>c</sub> = 173.19 in
r <sub>x</sub> = 7.355 in	K = 0.650 AASHTO Appendix C
I <sub>y</sub> = 2917.381 in <sup>4</sup>	
S <sub>y</sub> = 226.240 in <sup>3</sup>	
r <sub>y</sub> = 5.436 in	

Axial Loading

AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right)$$

For:  $\frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2}$$

For:  $\frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$

r <sub>y</sub> = 20.708	<	131.706
r <sub>x</sub> = 15.305	<	131.706

F<sub>CR</sub> = 32.592 ksi

P<sub>u</sub> = 2734.8 k

Axial Loading and Bending

AASHTO 10.54.2 Combined Axial Load and Bending

$$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2}$$

F<sub>ex</sub> = 1221.869 ksi  
 F<sub>ey</sub> = 667.466 ksi

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

M<sub>ux</sub> = 18178.4 k-ft

CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

Bent 23 North Column (116C1)

Section Properties (see section properties spreadsheet)

A = 59.436 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 2670.818 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 306.814 in <sup>3</sup>	L <sub>c</sub> = 172.38 in
r <sub>x</sub> = 6.703 in	K = 0.800 AASHTO Appendix C
I <sub>y</sub> = 1644.391 in <sup>4</sup>	
S <sub>y</sub> = 132.615 in <sup>3</sup>	
r <sub>y</sub> = 5.260 in	

Axial Loading

AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right)$$

For:  $\frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2}$$

For:  $\frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$

r <sub>y</sub> = 26.217	<	131.706
r <sub>x</sub> = 20.572	<	131.706

F<sub>CR</sub> = 32.346 ksi

P<sub>u</sub> = 1634.1 k

Axial Loading and Bending

AASHTO 10.54.2 Combined Axial Load and Bending

$$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2}$$

F<sub>ex</sub> = 676.341 ksi  
 F<sub>ey</sub> = 416.415 ksi

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

M<sub>ux</sub> = 10124.9 k-ft

CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

**Bent 23 South Column (117C1)**

Section Properties (see section properties spreadsheet)

A = 102.719 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 5721.420 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 582.629 in <sup>3</sup>	L <sub>c</sub> = 186.31 in
r <sub>x</sub> = 7.463 in	K = 0.800 AASHTO Appendix C
I <sub>y</sub> = 3012.685 in <sup>4</sup>	
S <sub>y</sub> = 232.500 in <sup>3</sup>	
r <sub>y</sub> = 5.416 in	

Axial Loading AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right) \quad \text{For: } \frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2} \quad \text{For: } \frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$$

r <sub>y</sub> = 27.522	<	131.706
r <sub>x</sub> = 19.971	<	131.706

F<sub>CR</sub> = 32.280 ksi

**P<sub>u</sub> = 2818.4 k**

Axial Loading and Bending AASHTO 10.54.2 Combined Axial Load and Bending

$$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2} \quad \begin{matrix} F_{ex} = 717.606 \text{ ksi} \\ F_{ey} = 377.864 \text{ ksi} \end{matrix}$$

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

**M<sub>ux</sub> = 19226.8 k-ft**

CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

Bent 24 North Column (169C1)

Section Properties (see section properties spreadsheet)

A = 61.860 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 2629.470 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 328.680 in <sup>3</sup>	L <sub>c</sub> = 189.75 in
r <sub>x</sub> = 6.520 in	K = 0.650 AASHTO Appendix C
I <sub>y</sub> = 1703.020 in <sup>4</sup>	
S <sub>y</sub> = 198.490 in <sup>3</sup>	
r <sub>y</sub> = 5.250 in	

Axial Loading AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right) \quad \text{For: } \frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2} \quad \text{For: } \frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$$

r <sub>y</sub> = 23.493	<	131.706
r <sub>x</sub> = 18.917	<	131.706

F<sub>CR</sub> = 32.475 ksi

$P_u = 1707.6 \text{ k}$

Axial Loading and Bending AASHTO 10.54.2 Combined Axial Load and Bending

$$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2} \quad \begin{matrix} F_{ex} = 799.839 \text{ ksi} \\ F_{ey} = 518.592 \text{ ksi} \end{matrix}$$

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

$M_{ux} = 10846.4 \text{ k-ft}$

CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

Bent 24 South Column (170C1)

Section Properties (see section properties spreadsheet)

A = 61.860 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 2629.470 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 328.680 in <sup>3</sup>	L <sub>c</sub> = 198.69 in
r <sub>x</sub> = 6.520 in	K = 0.650 AASHTO Appendix C
I <sub>y</sub> = 1703.020 in <sup>4</sup>	
S <sub>y</sub> = 198.490 in <sup>3</sup>	
r <sub>y</sub> = 5.250 in	

Axial Loading

AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right)$$

For:  $\frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2}$$

For:  $\frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$

r <sub>y</sub> = 24.599	<	131.706
r <sub>x</sub> = 19.808	<	131.706

F<sub>CR</sub> = 32.424 ksi

P<sub>u</sub> = 1704.9 k

Axial Loading and Bending

AASHTO 10.54.2 Combined Axial Load and Bending

$$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2}$$

F<sub>ex</sub> = 729.500 ksi  
 F<sub>ey</sub> = 472.986 ksi

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

M<sub>ux</sub> = 10846.4 k-ft



CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

Bent 25 North Column (171C1)

Section Properties (see section properties spreadsheet)

A = 61.860 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 2629.470 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 328.680 in <sup>3</sup>	L <sub>c</sub> = 198.69 in
r <sub>x</sub> = 6.520 in	K = 0.650 AASHTO Appendix C
I <sub>y</sub> = 1703.020 in <sup>4</sup>	
S <sub>y</sub> = 198.490 in <sup>3</sup>	
r <sub>y</sub> = 5.250 in	

Axial Loading AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right) \quad \text{For: } \frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2} \quad \text{For: } \frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$$

r<sub>y</sub> = 24.599 < 131.706  
 r<sub>x</sub> = 19.808 < 131.706

F<sub>CR</sub> = 32.424 ksi

$P_u = 1704.9 \text{ k}$

Axial Loading and Bending AASHTO 10.54.2 Combined Axial Load and Bending

$$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2} \quad F_{ex} = 729.500 \text{ ksi}$$

$$F_{ey} = 472.986 \text{ ksi}$$

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

$M_{ux} = 10846.4 \text{ k-ft}$

CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

Bent 25 South Column (172C1)

Section Properties (see section properties spreadsheet)

A = 61.860 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 2629.470 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 328.680 in <sup>3</sup>	L <sub>c</sub> = 201.06 in
r <sub>x</sub> = 6.520 in	K = 0.650 AASHTO Appendix C
I <sub>y</sub> = 1703.020 in <sup>4</sup>	
S <sub>y</sub> = 198.490 in <sup>3</sup>	
r <sub>y</sub> = 5.250 in	

Axial Loading

AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right)$$

For:  $\frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2}$$

For:  $\frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$

r <sub>y</sub> = 24.893	<	131.706
r <sub>x</sub> = 20.045	<	131.706

F<sub>CR</sub> = 32.411 ksi

P<sub>u</sub> = 1704.2 k

Axial Loading and Bending

AASHTO 10.54.2 Combined Axial Load and Bending

$$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2}$$

F<sub>ex</sub> = 712.367 ksi  
 F<sub>ey</sub> = 461.878 ksi

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

M<sub>ux</sub> = 10846.4 k-ft

CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

**Bent 26 North Column (173C1)**

Section Properties (see section properties spreadsheet)

A = 78.898 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 3886.706 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 422.698 in <sup>3</sup>	L <sub>c</sub> = 180.13 in
r <sub>x</sub> = 7.019 in	K = 0.800 AASHTO Appendix C
I <sub>y</sub> = 2222.353 in <sup>4</sup>	
S <sub>y</sub> = 176.367 in <sup>3</sup>	
r <sub>y</sub> = 5.307 in	

Axial Loading AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right) \quad \text{For: } \frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2} \quad \text{For: } \frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$$

r <sub>y</sub> = 27.151	<	131.706
r <sub>x</sub> = 20.531	<	131.706

F<sub>CR</sub> = 32.299 ksi

**P<sub>u</sub> = 2166.1 k**

Axial Loading and Bending AASHTO 10.54.2 Combined Axial Load and Bending

$$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2} \quad \begin{matrix} F_{ex} = 679.028 \text{ ksi} \\ F_{ey} = 388.257 \text{ ksi} \end{matrix}$$

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

**M<sub>ux</sub> = 13949.0 k-ft**

CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

**Bent 26 South Column (174C1)**

Section Properties (see section properties spreadsheet)

A = 78.898 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 3886.706 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 422.698 in <sup>3</sup>	L <sub>c</sub> = 187.06 in
r <sub>x</sub> = 7.019 in	K = 0.800 AASHTO Appendix C
I <sub>y</sub> = 2222.353 in <sup>4</sup>	
S <sub>y</sub> = 176.367 in <sup>3</sup>	
r <sub>y</sub> = 5.307 in	

Axial Loading AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right) \quad \text{For: } \frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2} \quad \text{For: } \frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$$

r <sub>y</sub> = 28.197	<	131.706
r <sub>x</sub> = 21.321	<	131.706

F<sub>CR</sub> = 32.244 ksi

**P<sub>u</sub> = 2162.4 k**

Axial Loading and Bending AASHTO 10.54.2 Combined Axial Load and Bending

$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2} \quad \begin{matrix} F_{ex} = 629.597 \text{ ksi} \\ F_{ey} = 359.993 \text{ ksi} \end{matrix}$$

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

**M<sub>ux</sub> = 13949.0 k-ft**

CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

Bent 27 North Column (214C1)

Section Properties (see section properties spreadsheet)

A = 70.898 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 3228.546 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 360.933 in <sup>3</sup>	L <sub>c</sub> = 185.19 in
r <sub>x</sub> = 6.748 in	K = 0.650 AASHTO Appendix C
I <sub>y</sub> = 2028.183 in <sup>4</sup>	
S <sub>y</sub> = 163.334 in <sup>3</sup>	
r <sub>y</sub> = 5.349 in	

Axial Loading AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right) \quad \text{For: } \frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2} \quad \text{For: } \frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$$

r <sub>y</sub> = 22.505	<	131.706
r <sub>x</sub> = 17.838	<	131.706

F<sub>CR</sub> = 32.518 ksi

$P_u = 1959.6 \text{ k}$

Axial Loading and Bending AASHTO 10.54.2 Combined Axial Load and Bending

$$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2} \quad \begin{matrix} F_{ex} = 899.546 \text{ ksi} \\ F_{ey} = 565.098 \text{ ksi} \end{matrix}$$

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

$M_{ux} = 11910.8 \text{ k-ft}$

CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

Bent 27 South Column (215C1)

Section Properties (see section properties spreadsheet)

A = 70.898 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 3228.546 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 360.933 in <sup>3</sup>	L <sub>c</sub> = 187.13 in
r <sub>x</sub> = 6.748 in	K = 0.650 AASHTO Appendix C
I <sub>y</sub> = 2028.183 in <sup>4</sup>	
S <sub>y</sub> = 163.334 in <sup>3</sup>	
r <sub>y</sub> = 5.349 in	

Axial Loading AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right) \quad \text{For: } \frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2} \quad \text{For: } \frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$$

r <sub>y</sub> = 22.741	<	131.706
r <sub>x</sub> = 18.024	<	131.706

F<sub>CR</sub> = 32.508 ksi

**P<sub>u</sub> = 1959.0 k**

Axial Loading and Bending AASHTO 10.54.2 Combined Axial Load and Bending

$$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2} \quad \begin{matrix} F_{ex} = 881.014 \text{ ksi} \\ F_{ey} = 553.456 \text{ ksi} \end{matrix}$$

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

**M<sub>ux</sub> = 11910.8 k-ft**

CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

Bent 28 North Column (216C1)

Section Properties (see section properties spreadsheet)

A = 70.898 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 3228.546 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 360.933 in <sup>3</sup>	L <sub>c</sub> = 180.81 in
r <sub>x</sub> = 6.748 in	K = 0.650 AASHTO Appendix C
I <sub>y</sub> = 2028.183 in <sup>4</sup>	
S <sub>y</sub> = 163.334 in <sup>3</sup>	
r <sub>y</sub> = 5.349 in	

Axial Loading AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right) \quad \text{For: } \frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2} \quad \text{For: } \frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$$

r <sub>y</sub> = 21.974	<	131.706
r <sub>x</sub> = 17.416	<	131.706

F<sub>CR</sub> = 32.541 ksi

**P<sub>u</sub> = 1961.0 k**

Axial Loading and Bending AASHTO 10.54.2 Combined Axial Load and Bending

$$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2} \quad \begin{matrix} F_{ex} = 943.604 \text{ ksi} \\ F_{ey} = 592.775 \text{ ksi} \end{matrix}$$

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

**M<sub>ux</sub> = 11910.8 k-ft**

CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

Bent 28 South Column (217C1)

Section Properties (see section properties spreadsheet)

A = 70.898 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 3228.546 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 360.933 in <sup>3</sup>	L <sub>c</sub> = 182.75 in
r <sub>x</sub> = 6.748 in	K = 0.650 AASHTO Appendix C
I <sub>y</sub> = 2028.183 in <sup>4</sup>	
S <sub>y</sub> = 163.334 in <sup>3</sup>	
r <sub>y</sub> = 5.349 in	

Axial Loading

AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right)$$

For:  $\frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2}$$

For:  $\frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$

r <sub>y</sub> = 22.209	<	131.706
r <sub>x</sub> = 17.603	<	131.706

F<sub>CR</sub> = 32.531 ksi

P<sub>u</sub> = 1960.4 k

Axial Loading and Bending

AASHTO 10.54.2 Combined Axial Load and Bending

$$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2}$$

F<sub>ex</sub> = 923.702 ksi  
 F<sub>ey</sub> = 580.273 ksi

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

M<sub>ux</sub> = 11910.8 k-ft



CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

Bent 29 North Column (218C1)

Section Properties (see section properties spreadsheet)

A = 74.898 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 3553.091 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 391.741 in <sup>3</sup>	L <sub>c</sub> = 164.88 in
r <sub>x</sub> = 6.888 in	K = 0.800 AASHTO Appendix C
I <sub>y</sub> = 2125.896 in <sup>4</sup>	
S <sub>y</sub> = 169.882 in <sup>3</sup>	
r <sub>y</sub> = 5.328 in	

Axial Loading AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right) \quad \text{For: } \frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2} \quad \text{For: } \frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$$

r<sub>y</sub> = 24.758 < 131.706  
 r<sub>x</sub> = 19.150 < 131.706

F<sub>CR</sub> = 32.417 ksi

P<sub>u</sub> = 2063.8 k

Axial Loading and Bending AASHTO 10.54.2 Combined Axial Load and Bending

$$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2} \quad F_{ex} = 780.453 \text{ ksi}$$

$$F_{ey} = 466.963 \text{ ksi}$$

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

M<sub>ux</sub> = 12927.5 k-ft

CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

**Bent 29 South Column (219C1)**

Section Properties (see section properties spreadsheet)

A = 74.898 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 3553.091 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 391.741 in <sup>3</sup>	L <sub>c</sub> = 160.44 in
r <sub>x</sub> = 6.888 in	K = 0.800 AASHTO Appendix C
I <sub>y</sub> = 2125.896 in <sup>4</sup>	
S <sub>y</sub> = 169.882 in <sup>3</sup>	
r <sub>y</sub> = 5.328 in	

Axial Loading AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right) \quad \text{For: } \frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2} \quad \text{For: } \frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$$

r <sub>y</sub> = 24.091	<	131.706
r <sub>x</sub> = 18.635	<	131.706

F<sub>CR</sub> = 32.448 ksi

**P<sub>u</sub> = 2065.7 k**

Axial Loading and Bending AASHTO 10.54.2 Combined Axial Load and Bending

$$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2} \quad \begin{matrix} F_{ex} = 824.223 \text{ ksi} \\ F_{ey} = 493.151 \text{ ksi} \end{matrix}$$

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

**M<sub>ux</sub> = 12927.5 k-ft**

CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

Bent 30 North Column (270C1)

Section Properties (see section properties spreadsheet)

A = 64.912 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 2984.584 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 338.005 in <sup>3</sup>	L <sub>c</sub> = 171.81 in
r <sub>x</sub> = 6.781 in	K = 0.650 AASHTO Appendix C
I <sub>y</sub> = 1853.479 in <sup>4</sup>	
S <sub>y</sub> = 148.374 in <sup>3</sup>	
r <sub>y</sub> = 5.344 in	

Axial Loading AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right) \quad \text{For: } \frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2} \quad \text{For: } \frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$$

r <sub>y</sub> = 20.900	<	131.706
r <sub>x</sub> = 16.470	<	131.706

F<sub>CR</sub> = 32.585 ksi

$P_u = 1797.9 \text{ k}$

Axial Loading and Bending AASHTO 10.54.2 Combined Axial Load and Bending

$$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2} \quad \begin{matrix} F_{ex} = 1055.166 \text{ ksi} \\ F_{ey} = 655.276 \text{ ksi} \end{matrix}$$

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

$M_{ux} = 11154.2 \text{ k-ft}$

CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

**Bent 30 South Column (271C1)**

Section Properties (see section properties spreadsheet)

A = 64.912 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 2984.584 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 338.005 in <sup>3</sup>	L <sub>c</sub> = 160.69 in
r <sub>x</sub> = 6.781 in	K = 0.650 AASHTO Appendix C
I <sub>y</sub> = 1853.479 in <sup>4</sup>	
S <sub>y</sub> = 148.374 in <sup>3</sup>	
r <sub>y</sub> = 5.344 in	

Axial Loading AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right) \quad \text{For: } \frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2} \quad \text{For: } \frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$$

r<sub>y</sub> = 19.546 < 131.706  
 r<sub>x</sub> = 15.403 < 131.706

F<sub>CR</sub> = 32.637 ksi

**P<sub>u</sub> = 1800.7 k**

Axial Loading and Bending AASHTO 10.54.2 Combined Axial Load and Bending

$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2} \quad \begin{matrix} F_{ex} = 1206.330 \text{ ksi} \\ F_{ey} = 749.152 \text{ ksi} \end{matrix}$$

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

**M<sub>ux</sub> = 11154.2 k-ft**

CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

Bent 31 North Column (272C1)

Section Properties (see section properties spreadsheet)

A = 64.912 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 2984.584 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 338.005 in <sup>3</sup>	L <sub>c</sub> = 165.63 in
r <sub>x</sub> = 6.781 in	K = 0.650 AASHTO Appendix C
I <sub>y</sub> = 1853.479 in <sup>4</sup>	
S <sub>y</sub> = 148.374 in <sup>3</sup>	
r <sub>y</sub> = 5.344 in	

Axial Loading AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right) \quad \text{For: } \frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2} \quad \text{For: } \frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$$

r <sub>y</sub> = 20.147	<	131.706
r <sub>x</sub> = 15.877	<	131.706

F<sub>CR</sub> = 32.614 ksi

$P_u = 1799.5 \text{ k}$

Axial Loading and Bending AASHTO 10.54.2 Combined Axial Load and Bending

$$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2} \quad \begin{matrix} F_{ex} = 1135.477 \text{ ksi} \\ F_{ey} = 705.151 \text{ ksi} \end{matrix}$$

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

$M_{ux} = 11154.2 \text{ k-ft}$

CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

Bent 31 South Column (273C1)

Section Properties (see section properties spreadsheet)

A = 64.912 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 2984.584 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 338.005 in <sup>3</sup>	L <sub>c</sub> = 160.56 in
r <sub>x</sub> = 6.781 in	K = 0.650 AASHTO Appendix C
I <sub>y</sub> = 1853.479 in <sup>4</sup>	
S <sub>y</sub> = 148.374 in <sup>3</sup>	
r <sub>y</sub> = 5.344 in	

Axial Loading AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right) \quad \text{For: } \frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2} \quad \text{For: } \frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$$

r <sub>y</sub> = 19.531	<	131.706
r <sub>x</sub> = 15.391	<	131.706

F<sub>CR</sub> = 32.637 ksi

**P<sub>u</sub> = 1800.8 k**

Axial Loading and Bending AASHTO 10.54.2 Combined Axial Load and Bending

$$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2} \quad \begin{matrix} F_{ex} = 1208.209 \text{ ksi} \\ F_{ey} = 750.319 \text{ ksi} \end{matrix}$$

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

**M<sub>ux</sub> = 11154.2 k-ft**

CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

Bent 32 North Column (274C1)

Section Properties (see section properties spreadsheet)

A = 84.960 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 4243.479 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 455.309 in <sup>3</sup>	L <sub>c</sub> = 163.88 in
r <sub>x</sub> = 7.067 in	K = 0.650 AASHTO Appendix C
I <sub>y</sub> = 2482.864 in <sup>4</sup>	
S <sub>y</sub> = 195.921 in <sup>3</sup>	
r <sub>y</sub> = 5.406 in	

Axial Loading AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right) \quad \text{For: } \frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2} \quad \text{For: } \frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$$

r<sub>y</sub> = 19.704 < 131.706  
 r<sub>x</sub> = 15.072 < 131.706

F<sub>CR</sub> = 32.631 ksi

P<sub>u</sub> = 2356.5 k

Axial Loading and Bending AASHTO 10.54.2 Combined Axial Load and Bending

$$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2} \quad \begin{matrix} F_{ex} = 1259.950 \text{ ksi} \\ F_{ey} = 737.198 \text{ ksi} \end{matrix}$$

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

M<sub>ux</sub> = 15025.2 k-ft

CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

Bent 32 South Column (275C1)

Section Properties (see section properties spreadsheet)

A = 55.436 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 2372.042 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 276.462 in <sup>3</sup>	L <sub>c</sub> = 159.50 in
r <sub>x</sub> = 6.541 in	K = 0.650 AASHTO Appendix C
I <sub>y</sub> = 1547.208 in <sup>4</sup>	
S <sub>y</sub> = 125.996 in <sup>3</sup>	
r <sub>y</sub> = 5.283 in	

Axial Loading

AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right)$$

For:  $\frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2}$$

For:  $\frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$

r<sub>y</sub> = 19.624 < 131.706  
 r<sub>x</sub> = 15.849 < 131.706

F<sub>CR</sub> = 32.634 ksi

P<sub>u</sub> = 1537.7 k

Axial Loading and Bending

AASHTO 10.54.2 Combined Axial Load and Bending

$$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2}$$

F<sub>ex</sub> = 1139.415 ksi  
 F<sub>ey</sub> = 743.204 ksi

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

M<sub>ux</sub> = 9123.2 k-ft



CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

Bent 33 North Column (308C1)

Section Properties (see section properties spreadsheet)

A = 84.960 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 4243.479 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 455.309 in <sup>3</sup>	L <sub>c</sub> = 146.69 in
r <sub>x</sub> = 7.067 in	K = 0.650 AASHTO Appendix C
I <sub>y</sub> = 2482.864 in <sup>4</sup>	
S <sub>y</sub> = 195.921 in <sup>3</sup>	
r <sub>y</sub> = 5.406 in	

Axial Loading AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right) \quad \text{For: } \frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2} \quad \text{For: } \frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$$

r<sub>y</sub> = 17.638 < 131.706  
 r<sub>x</sub> = 13.491 < 131.706

F<sub>CR</sub> = 32.704 ksi

P<sub>u</sub> = 2361.8 k

Axial Loading and Bending AASHTO 10.54.2 Combined Axial Load and Bending

$$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2} \quad \begin{matrix} F_{ex} = 1572.507 \text{ ksi} \\ F_{ey} = 920.075 \text{ ksi} \end{matrix}$$

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

M<sub>ux</sub> = 15025.2 k-ft

CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

Bent 33 South Column (309C1)

Section Properties (see section properties spreadsheet)

A = 55.436 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 2372.042 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 276.462 in <sup>3</sup>	L <sub>c</sub> = 164.88 in
r <sub>x</sub> = 6.541 in	K = 0.650 AASHTO Appendix C
I <sub>y</sub> = 1547.208 in <sup>4</sup>	
S <sub>y</sub> = 125.996 in <sup>3</sup>	
r <sub>y</sub> = 5.283 in	

Axial Loading AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right) \quad \text{For: } \frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2} \quad \text{For: } \frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$$

r <sub>y</sub> = 20.286	<	131.706
r <sub>x</sub> = 16.383	<	131.706

F<sub>CR</sub> = 32.609 ksi

P<sub>u</sub> = 1536.5 k

Axial Loading and Bending AASHTO 10.54.2 Combined Axial Load and Bending

$$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2} \quad \begin{matrix} F_{ex} = 1066.335 \text{ ksi} \\ F_{ey} = 695.537 \text{ ksi} \end{matrix}$$

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

M<sub>ux</sub> = 9123.2 k-ft

CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

Bent 34 North Column (310C1)

Section Properties (see section properties spreadsheet)

A = 55.436 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 2372.042 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 276.462 in <sup>3</sup>	L <sub>c</sub> = 175.75 in
r <sub>x</sub> = 6.541 in	K = 0.650 AASHTO Appendix C
I <sub>y</sub> = 1547.208 in <sup>4</sup>	
S <sub>y</sub> = 125.996 in <sup>3</sup>	
r <sub>y</sub> = 5.283 in	

Axial Loading AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right) \quad \text{For: } \frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2} \quad \text{For: } \frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$$

r<sub>y</sub> = 21.624 < 131.706  
 r<sub>x</sub> = 17.464 < 131.706

F<sub>CR</sub> = 32.555 ksi

P<sub>u</sub> = 1534.0 k

Axial Loading and Bending AASHTO 10.54.2 Combined Axial Load and Bending

$$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2} \quad \begin{matrix} F_{ex} = 938.453 \text{ ksi} \\ F_{ey} = 612.123 \text{ ksi} \end{matrix}$$

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

M<sub>ux</sub> = 9123.2 k-ft

CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

**Bent 34 South Column (311C1)**

Section Properties (see section properties spreadsheet)

A = 78.020 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 3843.102 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 417.956 in <sup>3</sup>	L <sub>c</sub> = 149.13 in
r <sub>x</sub> = 7.018 in	K = 0.650 AASHTO Appendix C
I <sub>y</sub> = 2164.853 in <sup>4</sup>	
S <sub>y</sub> = 169.154 in <sup>3</sup>	
r <sub>y</sub> = 5.268 in	

Axial Loading AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right) \quad \text{For: } \frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2} \quad \text{For: } \frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$$

r <sub>y</sub> = 18.401	<	131.706
r <sub>x</sub> = 13.811	<	131.706

F<sub>CR</sub> = 32.678 ksi

**P<sub>u</sub> = 2167.1 k**

Axial Loading and Bending AASHTO 10.54.2 Combined Axial Load and Bending

$$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2} \quad \begin{matrix} F_{ex} = 1500.539 \text{ ksi} \\ F_{ey} = 845.267 \text{ ksi} \end{matrix}$$

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

**M<sub>ux</sub> = 13792.5 k-ft**

CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

Bent 35 North Column (C10)

Section Properties (see section properties spreadsheet)

A = 126.719 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 8217.058 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 777.394 in <sup>3</sup>	L <sub>c</sub> = 180.19 in
r <sub>x</sub> = 8.053 in	K = 0.800 AASHTO Appendix C
I <sub>y</sub> = 3571.287 in <sup>4</sup>	
S <sub>y</sub> = 269.513 in <sup>3</sup>	
r <sub>y</sub> = 5.309 in	

Axial Loading AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right) \quad \text{For: } \frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2} \quad \text{For: } \frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$$

r<sub>y</sub> = 27.153 < 131.706  
 r<sub>x</sub> = 17.901 < 131.706

F<sub>CR</sub> = 32.299 ksi

$P_u = 3478.9 \text{ k}$

Axial Loading and Bending AASHTO 10.54.2 Combined Axial Load and Bending

$$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2} \quad F_{ex} = 893.187 \text{ ksi}$$

$$F_{ey} = 388.196 \text{ ksi}$$

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

$M_{ux} = 25654.0 \text{ k-ft}$

CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

Bent 35 South Column (C12)

Section Properties (see section properties spreadsheet)

A = 126.719 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 8217.058 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 777.394 in <sup>3</sup>	L <sub>c</sub> = 147.19 in
r <sub>x</sub> = 8.053 in	K = 0.800 AASHTO Appendix C
I <sub>y</sub> = 3571.287 in <sup>4</sup>	
S <sub>y</sub> = 269.513 in <sup>3</sup>	
r <sub>y</sub> = 5.309 in	

Axial Loading AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right) \quad \text{For: } \frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2} \quad \text{For: } \frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$$

r <sub>y</sub> = 22.180	<	131.706
r <sub>x</sub> = 14.623	<	131.706

F<sub>CR</sub> = 32.532 ksi

$P_u = 3504.1 \text{ k}$

Axial Loading and Bending AASHTO 10.54.2 Combined Axial Load and Bending

$$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2} \quad \begin{matrix} F_{ex} = 1338.596 \text{ ksi} \\ F_{ey} = 581.779 \text{ ksi} \end{matrix}$$

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

$M_{ux} = 25654.0 \text{ k-ft}$

CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

Bent 36 North Column (C11)

Section Properties (see section properties spreadsheet)

A = 126.719 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 8217.058 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 777.394 in <sup>3</sup>	L <sub>c</sub> = 119.38 in
r <sub>x</sub> = 8.053 in	K = 0.800 AASHTO Appendix C
I <sub>y</sub> = 3571.287 in <sup>4</sup>	
S <sub>y</sub> = 269.513 in <sup>3</sup>	
r <sub>y</sub> = 5.309 in	

Axial Loading AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right) \quad \text{For: } \frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2} \quad \text{For: } \frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$$

r<sub>y</sub> = 17.989 < 131.706  
 r<sub>x</sub> = 11.860 < 131.706

F<sub>CR</sub> = 32.692 ksi

P<sub>u</sub> = 3521.3 k

Axial Loading and Bending AASHTO 10.54.2 Combined Axial Load and Bending

$$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2} \quad \begin{matrix} F_{ex} = 2035.002 \text{ ksi} \\ F_{ey} = 884.450 \text{ ksi} \end{matrix}$$

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

M<sub>ux</sub> = 25654.0 k-ft

CUY-2-1441 Load Rating Analysis - As-Built Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

Bent 36 South Column (C13)

Section Properties (see section properties spreadsheet)

A = 126.719 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 8217.058 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 777.394 in <sup>3</sup>	L <sub>c</sub> = 119.13 in
r <sub>x</sub> = 8.053 in	K = 0.800 AASHTO Appendix C
I <sub>y</sub> = 3571.287 in <sup>4</sup>	
S <sub>y</sub> = 269.513 in <sup>3</sup>	
r <sub>y</sub> = 5.309 in	

Axial Loading AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right) \quad \text{For: } \frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2} \quad \text{For: } \frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$$

r<sub>y</sub> = 17.952 < 131.706  
 r<sub>x</sub> = 11.835 < 131.706

F<sub>CR</sub> = 32.693 ksi

P<sub>u</sub> = 3521.5 k

Axial Loading and Bending AASHTO 10.54.2 Combined Axial Load and Bending

$$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2} \quad F_{ex} = 2043.552 \text{ ksi}$$

$$F_{ey} = 888.166 \text{ ksi}$$

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

M<sub>ux</sub> = 25654.0 k-ft



CUY-2-1441 Load Rating Analysis - As-Inspected Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

Bent 14 South Column (4C2)

Section Properties (see section properties spreadsheet)

A = 75.135 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 3811.909 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 451.648 in <sup>3</sup>	L <sub>c</sub> = 120.19 in
r <sub>x</sub> = 7.123 in	K = 0.650 AASHTO Appendix C
I <sub>y</sub> = 1436.577 in <sup>4</sup>	
S <sub>y</sub> = 173.183 in <sup>3</sup>	
r <sub>y</sub> = 4.373 in	

Axial Loading AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right) \quad \text{For: } \frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2} \quad \text{For: } \frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$$

r <sub>y</sub> = 17.866	< 131.706
r <sub>x</sub> = 10.968	< 131.706

F<sub>CR</sub> = 32.696 ksi

P<sub>u</sub> = 2088.1 k

Axial Loading and Bending AASHTO 10.54.2 Combined Axial Load and Bending

$$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2} \quad \begin{matrix} F_{ex} = 2379.329 \text{ ksi} \\ F_{ey} = 896.687 \text{ ksi} \end{matrix}$$

Column Moment Capacity  
 M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

M <sub>ux</sub> = 14904.4 k-ft	M <sub>uy</sub> = 5715.0 k-ft
--------------------------------	-------------------------------

CUY-2-1441 Load Rating Analysis - As-Inspected Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

Bent 15 North Column (5C1)

Section Properties (see section properties spreadsheet)

A = 64.202 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 2843.241 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 322.363 in <sup>3</sup>	L <sub>c</sub> = 131.13 in
r <sub>x</sub> = 6.655 in	K = 0.650 AASHTO Appendix C
I <sub>y</sub> = 1897.200 in <sup>4</sup>	
S <sub>y</sub> = 156.363 in <sup>3</sup>	
r <sub>y</sub> = 5.436 in	

Axial Loading AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right) \quad \text{For: } \frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2} \quad \text{For: } \frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$$

r<sub>y</sub> = 15.679 < 131.706  
 r<sub>x</sub> = 12.808 < 131.706

F<sub>CR</sub> = 32.766 ksi

P<sub>u</sub> = 1788.1 k

Axial Loading and Bending AASHTO 10.54.2 Combined Axial Load and Bending

$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$

= 0.6 + 0.4

To be conservative assume C is unity  
 C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2} \quad F_{ex} = 1744.890 \text{ ksi}$$

$$F_{ey} = 1164.307 \text{ ksi}$$

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

M<sub>ux</sub> = 10638.0 k-ft

M<sub>uy</sub> = 5160.0 k-ft

CUY-2-1441 Load Rating Analysis - As-Inspected Column Capacities  
 Main Ave Bridge  
 East Approach Lakefront Trestle

Bent 17 North Column (9C1)

Section Properties (see section properties spreadsheet)

A = 59.518 in <sup>2</sup>	F <sub>y</sub> = 33.0 ksi
I <sub>x</sub> = 2680.782 in <sup>4</sup>	E = 29000 ksi
S <sub>x</sub> = 303.944 in <sup>3</sup>	L <sub>c</sub> = 145.25 in
r <sub>x</sub> = 6.711 in	K = 0.650 AASHTO Appendix C
I <sub>y</sub> = 1629.171 in <sup>4</sup>	
S <sub>y</sub> = 129.692 in <sup>3</sup>	
r <sub>y</sub> = 5.232 in	

Axial Loading

AASHTO 10.54 Concentrically Loaded Columns

$P_u = 0.85 A_s F_{cr}$

$$F_{cr} = F_y \left( 1 - \frac{F_y}{4\pi^2 E} \left( \frac{KL_c}{r} \right)^2 \right)$$

For:  $\frac{KL_c}{r} \leq \sqrt{\frac{2\pi^2 E}{F_y}}$

$$F_{cr} = \frac{\pi^2 E}{\left( \frac{KL_c}{r} \right)^2}$$

For:  $\frac{KL_c}{r} > \sqrt{\frac{2\pi^2 E}{F_y}}$

r <sub>y</sub> = 18.046	<	131.706
r <sub>x</sub> = 14.068	<	131.706

F<sub>CR</sub> = 32.690 ksi

P<sub>u</sub> = 1653.8 k

Axial Loading and Bending

AASHTO 10.54.2 Combined Axial Load and Bending

$$\frac{P}{P_u} + \frac{MC}{M_u \left( 1 - \frac{P}{A_s F_e} \right)} \leq 1.0$$

= 0.6 + 0.4

To be conservative assume C is unity

C = 1.000

$$F_e = \frac{E\pi^2}{\left( \frac{KL_c}{r} \right)^2}$$

F<sub>ex</sub> = 1446.283 ksi

F<sub>ey</sub> = 878.939 ksi

Column Moment Capacity

M<sub>u</sub> = F<sub>y</sub>S For Non-Compact Section

M <sub>ux</sub> = 10030.1 k-ft	
M <sub>uy</sub> = 4279.8 k-ft	



# BRACKET RATING



Lakefront Trestle - HS20 Girder Ratings



Made By: DMP Date: 4/12/2012 Job No.: P402110046  
 Checked By: CTG Date: 4/13/2012 Sheet No.: \_\_\_\_\_

**Bracket Rating - As Built**

Plan ID	STAAD ID	Bracket Section	CAPACITIES		SERVICE LOAD				IMPACT	RATING FACTORS - HS20			
					DEAD LOAD		HS 20			Moment		Shear	
			Moment (kip-ft)	Shear (kips)	M <sub>DL</sub> (k-ft)	V <sub>DL</sub> (k)	M <sub>LL</sub> (k-ft)	V <sub>LL</sub> (k)		Inv.	Opr.	Inv.	Opr.
A2	446	@ FB	1453.19	254.58	221.6	41.14	228.21	43.22	1.3	1.81	3.02	1.65	2.75
C4	654	@ FB	2639.92	423.87	323.7	47.44	412.47	51.7	1.3	1.91	3.18	2.48	4.15
C5	690	@ FB	2022.89	357.68	291.74	35.81	414.29	47.67	1.3	1.41	2.35	2.31	3.86
C9	717	@ FB	3125.29	436.56	132.5	32.81	168.45	39.86	1.3	6.21	10.38	3.50	5.85
E4	769	@ FB	1507.21	402.82	383.29	56.57	417.90	57.27	1.3	0.86	1.43	2.04	3.40
H1	1015	@ FB	1071.58	255.33	183.16	29.73	267.29	41.8	1.3	1.11	1.85	1.84	3.07

**Lakefront Trestle - HS20 Girder Ratings**



Made By: DMP Date: 4/12/2012 Job No.: P402110046  
 Checked By: CTG Date: 4/13/2012 Sheet No.: \_\_\_\_\_

**Bracket Rating - As Built**

Plan ID	STAAD ID	Bracket Section	CAPACITIES		SERVICE LOAD				IMPACT	FACTORS - 2F1	
					DEAD LOAD		2F1			Moment	Shear
			Moment (kip-ft)	Shear (kips)	M <sub>DL</sub> (k-ft)	V <sub>DL</sub> (k)	M <sub>LL</sub> (k-ft)	V <sub>LL</sub> (k)		Opr.	Opr.
A2	446	@ FB	1453.19	254.58	221.6	41.14	104.20	19.85	1.30	6.62	5.99
C4	654	@ FB	2639.92	423.87	323.7	47.44	211.72	25.89	1.30	6.20	8.28
C5	690	@ FB	2022.89	357.68	291.74	35.81	211.37	24.84	1.30	4.60	7.41
C9	717	@ FB	3125.29	436.56	132.5	32.81	88.21	20.96	1.30	19.81	11.12
E4	769	@ FB	1507.21	402.82	383.29	56.57	200.74	27.05	1.30	2.97	7.20
H1	1015	@ FB	1071.58	255.33	183.16	29.73	140.86	22.37	1.30	3.50	5.73

**Lakefront Trestle - HS20 Girder Ratings**



Made By: DMP Date: 4/12/2012 Job No.: P402110046  
 Checked By: CTG Date: 4/13/2012 Sheet No.: \_\_\_\_\_

**Bracket Rating - As Built**

Plan ID	STAAD ID	Bracket Section	CAPACITIES		SERVICE LOAD				IMPACT	FACTORS - 3F1	
					DEAD LOAD		3F1			Moment	Shear
			Moment (kip-ft)	Shear (kips)	M <sub>DL</sub> (k-ft)	V <sub>DL</sub> (k)	M <sub>LL</sub> (k-ft)	V <sub>LL</sub> (k)		Opr.	Opr.
A2	446	@ FB	1453.19	254.58	221.6	41.14	158.26583	30.15	1.30	4.36	3.95
C4	654	@ FB	2639.92	423.87	323.7	47.44	316.93417	39	1.30	4.14	5.50
C5	690	@ FB	2022.89	357.68	291.74	35.81	317.3675	36.98	1.30	3.06	4.98
C9	717	@ FB	3125.29	436.56	132.5	32.81	132.52417	31.42	1.30	13.19	7.42
E4	769	@ FB	1507.21	402.82	383.29	56.57	301.845	40.84	1.30	1.98	4.77
H1	1015	@ FB	1071.58	255.33	183.16	29.73	209.22583	33.25	1.30	2.36	3.86

**Lakefront Trestle - HS20 Girder Ratings**



Made By: DMP Date: 4/12/2012 Job No.: P402110046  
 Checked By: CTG Date: 4/13/2012 Sheet No.: \_\_\_\_\_

**Bracket Rating - As Built**

		Bracket Section	CAPACITIES		SERVICE LOAD				IMPACT	FACTORS - 4F1	
Plan ID	STAAD ID		Moment (kip-ft)	Shear (kips)	DEAD LOAD		4F1			Moment	Shear
					M <sub>DL</sub> (k-ft)	V <sub>DL</sub> (k)	M <sub>LL</sub> (k-ft)	V <sub>LL</sub> (k)		Opr.	Opr.
A2	446	@ FB	1453.19	254.58	221.6	41.14	182.53667	34.74	1.30	3.78	3.43
C4	654	@ FB	2639.92	423.87	323.7	47.44	359.2975	44.45	1.30	3.65	4.82
C5	690	@ FB	2022.89	357.68	291.74	35.81	358.87583	41.6	1.30	2.71	4.43
C9	717	@ FB	3125.29	436.56	132.5	32.81	146.69917	34.83	1.30	11.91	6.69
E4	769	@ FB	1507.21	402.82	383.29	56.57	346.44333	46.86	1.30	1.72	4.16
H1	1015	@ FB	1071.58	255.33	183.16	29.73	236.3	37.35	1.30	2.09	3.43



**Lakefront Trestle - HS20 Girder Ratings**



Made By: DMP Date: 4/12/2012 Job No.: P402110046  
 Checked By: CTG Date: 4/13/2012 Sheet No.: \_\_\_\_\_

**Bracket Rating - As Built**

Plan ID		STAAD ID	Bracket Section	CAPACITIES		SERVICE LOAD				IMPACT	FACTORS - 5C1	
						DEAD LOAD		5C1			Moment	Shear
						M <sub>DL</sub> (k-ft)	V <sub>DL</sub> (k)	M <sub>LL</sub> (k-ft)	V <sub>LL</sub> (k)		Opr.	Opr.
A2	446	@ FB	1453.19	254.58	221.6	41.14	164.7125	30.6	1.30	4.19	3.89	
C4	654	@ FB	2639.92	423.87	323.7	47.44	308.185	38.06	1.30	4.26	5.63	
C5	690	@ FB	2022.89	357.68	291.74	35.81	304.74083	34.82	1.30	3.19	5.29	
C9	717	@ FB	3125.29	436.56	132.5	32.81	129.38333	30.68	1.30	13.51	7.60	
E4	769	@ FB	1507.21	402.82	383.29	56.57	298.8175	40.72	1.30	2.00	4.78	
H1	1015	@ FB	1071.58	255.33	183.16	29.73	199.45583	31.34	1.30	2.47	4.09	



Made By: DMP  
 Checked By: CTG

Date: 4/13/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

**Lakefront Trestle- Girder Fatigue Summary**

Redundant? No → f = 1.0 (Calculate SAFE Life per ODOT BDM 402.2.6)  
 Past ADTT (T<sub>p</sub>) = 257 → R<sub>s</sub> = 1.68  
 Weight Ratios = 1.0 (W<sub>p</sub>/W, W<sub>N</sub>/W) T<sub>N</sub> = 580 (Future ADTT, assuming growth rate of %1/year)  
 Impact\* = 1.15 (Per ODOT BDM 402.2.6)  
 F<sub>s3</sub> = 0.96  
 Y<sub>p</sub> = 72 (Present age of the bridge in years) Y<sub>f,MIN</sub> = **-21 years**

\* Impact is applied in calculation of stress range, S<sub>r</sub>. Do not include in service moment range.

**Girder Rating - As Built**

BRACKETS			Girder Spreadsheet Section	Section Moduli (in <sup>3</sup> )		SERVICE LOAD				FATIGUE			
Plan ID	STAAD ID	S <sub>x,top</sub>		S <sub>x,btm</sub>	Fatigue Moment		Sr (ksi)	C (Cycles per truck)	Category	K (Detail Constant)	Y <sub>f</sub> (years)	Y <sub>N</sub> (years)	Y <sub>f</sub> (years)
BRACKETS	A2	446	@ FB	465.62	465.62	124.59	3.69	1.00	D	6	97.79	43.32	11.43
	C4	654	@ FB	826.96	757.47	217.01	3.95	1.00	D	6	79.67	35.29	3.40
	C5	690	@ FB	645.78	645.78	220.04	4.70	1.00	D	6	47.36	20.98	-10.92
	C9	717	@ FB	964.50	851.61	85.07	1.38	1.00	D	6	1879.53	832.63	800.73
	E4	769	@ FB	693.85	548.08	226.56	5.70	1.50	D	6	26.52	11.75	-20.15
	H1	1015	@ FB	389.66	389.66	163.01	5.77	1.00	D	6	25.59	11.34	-20.56



Made By DMP  
Checked By CTG

Date 4/12/2012  
Date 4/13/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.6250$  in  
 $B_1 = l_v = 4.0000$  in

Bottom Angles:

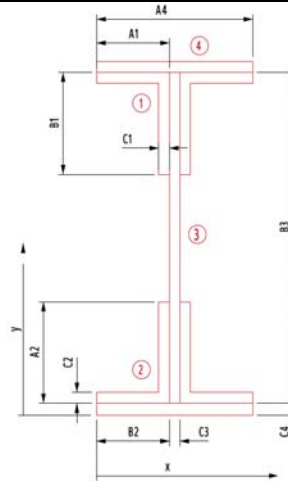
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.6250$  in  
 $A_2 = l_v = 4.0000$  in

Web Plate:

$C_3 = 0.3750$  in  
 $*B_3 = 36.5000$  in  
 $d_0 = N/A$  in  
 $d_0 =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 0.0000$  in  
 $A_4 = 0.0000$  in



Bracket A2 @ Floorbeam

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	7.5000	36.1875	271.4063	0.2441	17.9375	2413.1543	2413.3984
	Vertical Leg	4.2188	34.1875	144.2285	4.0045	15.9375	1071.5790	1075.5835
2	Horizontal Leg	7.5000	0.3125	2.3438	0.2441	17.9375	2413.1543	2413.3984
	Vertical Leg	4.2188	2.3125	9.7559	4.0045	15.9375	1071.5790	1075.5835
3	Web Plate	13.6875	18.2500	249.7969	1519.5977	0.0000	0.0000	1519.5977
4	Cover Plate Top	0.0000	36.5000	0.0000	0.0000	18.2500	0.0000	0.0000
	Cover Plate Bottom	0.0000	0.0000	0.0000	0.0000	18.2500	0.0000	0.0000
<b>Total</b>		<b>37.13</b>		<b>677.53</b>	<b>1528.09</b>		<b>6969.47</b>	<b>8497.56</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	18.2500	in	$S_{top} = 465.62$	in <sup>3</sup>	y-bar =	18.2500	in	$S_{top} = 465.62$	in <sup>3</sup>		
$I_x =$	8497.56	in <sup>4</sup>	$S_{bott.} = 465.62$	in <sup>3</sup>	$I_x =$	8497.56	in <sup>4</sup>	$S_{bott.} = 465.62$	in <sup>3</sup>		
$C_{top} =$	18.2500	in	A =	37.1250	in <sup>2</sup>	$C_{top} =$	18.2500	in	A =	37.1250	in <sup>2</sup>
$C_{bottom} =$	18.2500	in	$r_x =$	15.1291	in	$C_{bottom} =$	18.2500	in	$r_x =$	15.1291	in
J =	3.6934		Z =	528.4336	in <sup>5</sup>	Z =	785.9476			in <sup>5</sup>	

Y-Axis Section Properties:

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	3.7500	3.0000	11.2500	11.2500	3.1875	38.1006	49.3506	
	Vertical Leg	2.1094	5.6875	11.9971	0.0687	0.5000	0.5273	0.5960	
1 (Right)	Horizontal Leg	3.7500	9.3750	35.1563	11.2500	3.1875	38.1006	49.3506	
	Vertical Leg	2.1094	6.6875	14.1064	0.0687	0.5000	0.5273	0.5960	
2 (Left)	Horizontal Leg	3.7500	3.0000	11.2500	11.2500	3.1875	38.1006	49.3506	
	Vertical Leg	2.1094	5.6875	11.9971	0.0687	0.5000	0.5273	0.5960	
2 (Right)	Horizontal Leg	3.7500	9.3750	35.1563	11.2500	3.1875	38.1006	49.3506	
	Vertical Leg	2.1094	6.6875	14.1064	0.0687	0.5000	0.5273	0.5960	
3	Web Plate	13.6875	6.1875	84.6914	0.1604	0.0000	0.0000	0.1604	
4	Cover Plate	0.0000	6.1875	0.0000	0.0000	0.0000	0.0000	0.0000	
<b>Total</b>		<b>37.13</b>		<b>229.71</b>	<b>45.44</b>		<b>154.51</b>	<b>199.95</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	6.1875	in	S <sub>right</sub> =	32.31	in <sup>3</sup>	x-bar =	6.1875	in	S <sub>right</sub> =	32.31	in <sup>3</sup>
I <sub>y</sub> =	199.95	in <sup>4</sup>	S <sub>left</sub> =	32.31	in <sup>3</sup>	I <sub>y</sub> =	199.95	in <sup>4</sup>	S <sub>left</sub> =	32.31	in <sup>3</sup>
C <sub>right</sub> =	6.1875	in	A =	37.1250	in <sup>2</sup>	C <sub>right</sub> =	6.1875	in	A =	37.1250	in <sup>2</sup>
C <sub>left</sub> =	6.1875	in	r <sub>y</sub> =	2.3207	in	C <sub>left</sub> =	6.1875	in	r <sub>y</sub> =	2.3207	in

Non-composite Capacities*		
	AB	AI
M	1453.19 k-ft	2161.36 k-ft
V	254.58 k	254.58 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
------------------	-----------

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear

## Bracket C4 @ Floorbeam



Made By         DMP          
Checked By         CTG        

Date     4/12/2012      
Date     4/13/2012    

Job No.         P402110046          
Sheet No.                                 

Calculations For: **CUY-2-1441**

### Element Dimensions (without Section Losses):

#### Top Angles:

$A_1 = l_w = 4.0000$  in  
 $C_1 = t_f = 0.7500$  in  
 $B_1 = l_v = 6.0000$  in

#### Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.7500$  in  
 $A_2 = l_v = 4.0000$  in

#### Web Plate:

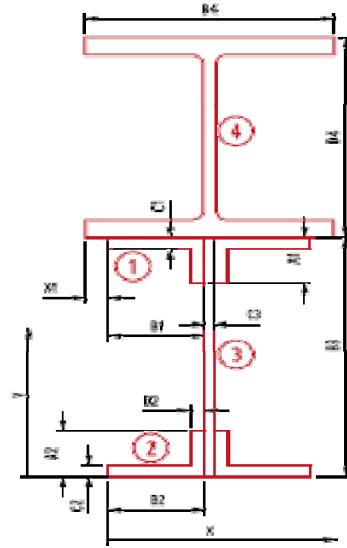
$C_3 = 0.5000$  in  
 $B_3 = 37.3750$  in  
  
 $X1 = -0.2500$  in  
  
 $d_o = 0.0000$

#### Rolled Section:

W12x65  
 $B4 = 12.0000$  in  
 $D4 = 12.1000$  in  
 $I_x = 533$  in<sup>4</sup>  
 $I_y = 174$  in<sup>4</sup>  
 $A = 19.1000$  in<sup>2</sup>

\*Wide Flange is actually on the bottom

\*\*Be sure to flip  $S_{top}$  and  $S_{bottom}$



### X-Axis Section Properties:

### Bracket C4 @ Floorbeam

Gross Section (without Losses)			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg		9.0000	37.0000	333.0000	0.2813	11.1775	1124.4249	1124.7062
	Vertical Leg		4.8750	34.0000	165.7500	18.0879	8.1775	325.9971	344.0850
2	Horizontal Leg		9.0000	0.3750	3.3750	0.4219	25.4475	5828.1856	5828.6075
	Vertical Leg		4.8750	2.3750	11.5781	4.2910	23.4475	2680.2073	2684.4983
3	Web Plate		18.6875	18.6875	349.2227	2175.3661	7.1350	951.3523	3126.7184
4	Rolled Section		19.1000	43.4250	829.4175	533.0000	17.6025	5918.0847	6451.0847
<b>Total</b>			<b>65.54</b>		<b>1692.34</b>	<b>2731.45</b>		<b>16828.25</b>	<b>19559.70</b>
Section Losses			A	y	Ay	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>x, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar =	25.8225 in	S <sub>top</sub> =	826.96 in <sup>3</sup>	y-bar =	25.8225 in	S <sub>top</sub> =	826.96 in <sup>3</sup>
I <sub>x</sub> =	19559.70 in <sup>4</sup>	S <sub>bottom</sub> =	757.47 in <sup>3</sup>	I <sub>x</sub> =	19559.70 in <sup>4</sup>	S <sub>bottom</sub> =	757.47 in <sup>3</sup>
C <sub>top</sub> =	23.6525 in	A =	65.5375 in <sup>2</sup>	C <sub>top</sub> =	23.6525 in	A =	65.5375 in <sup>2</sup>
C <sub>bottom</sub> =	25.8225 in	r <sub>x</sub> =	17.2757 in	C <sub>bottom</sub> =	25.8225 in	r <sub>x</sub> =	17.2757 in

Y-Axis Section Properties:

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	3.0000	2.0000	6.0000	4.0000	3.2563	31.8104	35.8104	
	Vertical Leg	3.9375	3.6250	14.2734	0.1846	1.6313	10.4782	10.6627	
1 (Right)	Horizontal Leg	3.0000	6.5000	19.5000	4.0000	1.2437	4.6404	8.6404	
	Vertical Leg	3.9375	4.8750	19.1953	0.1846	0.3813	0.5725	0.7570	
2 (Left)	Horizontal Leg	4.5000	3.0000	13.5000	13.5000	2.2563	22.9089	36.4089	
	Vertical Leg	2.4375	5.6250	13.7109	0.1143	0.3687	0.3314	0.4456	
2 (Right)	Horizontal Leg	4.5000	9.5000	42.7500	13.5000	4.2437	81.0407	94.5407	
	Vertical Leg	2.4375	6.8750	16.7578	0.1143	1.6187	6.3868	6.5010	
3	Web Plate	18.6875	4.2500	79.4219	0.3893	1.0063	18.9235	19.3128	
4	Rolled Section	19.1000	6.2500	119.3750	174.0000	0.9937	18.8603	192.8603	
<b>Total</b>		<b>65.54</b>		<b>344.48</b>	<b>209.99</b>		<b>195.95</b>	<b>405.94</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.2563	in	S <sub>right</sub> =	58.04	in <sup>3</sup>	x-bar =	5.2563	in	S <sub>right</sub> =	58.04	in <sup>3</sup>
I <sub>y</sub> =	405.94	in <sup>4</sup>	S <sub>left</sub> =	81.09	in <sup>3</sup>	I <sub>y</sub> =	405.94	in <sup>4</sup>	S <sub>left</sub> =	81.09	in <sup>3</sup>
C <sub>right</sub> =	6.9937	in	A =	65.5375	in <sup>2</sup>	C <sub>right</sub> =	6.9937	in	A =	65.5375	in <sup>2</sup>
C <sub>left</sub> =	5.0063	in	r <sub>y</sub> =	2.4888	in	C <sub>left</sub> =	5.0063	in	r <sub>y</sub> =	2.4888	in

Floorbeam Capacities

Non-composite Capacities*		
	AB	AI
M	2639.92 k-ft	2639.92 k-ft
V	423.87 k	423.87 k

\*Noncompact Section

F <sub>y</sub> =	33.00 ksi
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AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear



Made By DMP  
Checked By CTG

Date 4/12/2012  
Date 4/13/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles:

$A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.8750$  in  
 $B_1 = l_v = 4.0000$  in

Bottom Angles:

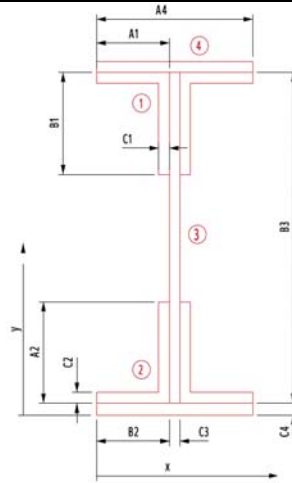
$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.8750$  in  
 $A_2 = l_v = 4.0000$  in

Web Plate:

$C_3 = 0.5000$  in  
 $*B_3 = 37.3750$  in  
 $d_0 = N/A$  in  
 $d_0 =$  stiffener spacing for shear check  
Use "N/A" for no stiffeners

Cover Plate:

$C_4 = 0.0000$  in  
 $A_4 = 0.0000$  in



**Bracket C5 @ Floorbeam**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	10.5000	36.9375	387.8438	0.6699	18.2500	3497.1563	3497.8262
	Vertical Leg	5.4688	34.9375	191.0645	4.4505	16.2500	1444.0918	1448.5423
2	Horizontal Leg	10.5000	0.4375	4.5938	0.6699	18.2500	3497.1563	3497.8262
	Vertical Leg	5.4688	2.4375	13.3301	4.4505	16.2500	1444.0918	1448.5423
3	Web Plate	18.6875	18.6875	349.2227	2175.3661	0.0000	0.0000	2175.3661
4	Cover Plate Top	0.0000	37.3750	0.0000	0.0000	18.6875	0.0000	0.0000
	Cover Plate Bottom	0.0000	0.0000	0.0000	0.0000	18.6875	0.0000	0.0000
<b>Total</b>		<b>50.63</b>		<b>946.05</b>	<b>2185.61</b>		<b>9882.50</b>	<b>12068.10</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
y-bar =	18.6875	in	$S_{top} = 645.78$	in <sup>3</sup>	y-bar =	18.6875	in	$S_{top} = 645.78$	in <sup>3</sup>		
$I_x =$	12068.10	in <sup>4</sup>	$S_{bott.} = 645.78$	in <sup>3</sup>	$I_x =$	12068.10	in <sup>4</sup>	$S_{bott.} = 645.78$	in <sup>3</sup>		
$C_{top} =$	18.6875	in	A =	50.6250	in <sup>2</sup>	$C_{top} =$	18.6875	in	A =	50.6250	in <sup>2</sup>
$C_{bottom} =$	18.6875	in	$r_x =$	15.4396	in	$C_{bottom} =$	18.6875	in	$r_x =$	15.4396	in
J =	9.7080		Z =	735.5957	in <sup>3</sup>	Z =	785.9476			in <sup>3</sup>	

Y-Axis Section Properties:

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg		5.2500	3.0000	15.7500	15.7500	3.2500	55.4531	71.2031
	Vertical Leg		2.7344	5.5625	15.2100	0.1745	0.6875	1.2924	1.4669
1 (Right)	Horizontal Leg		5.2500	9.5000	49.8750	15.7500	3.2500	55.4531	71.2031
	Vertical Leg		2.7344	6.9375	18.9697	0.1745	0.6875	1.2924	1.4669
2 (Left)	Horizontal Leg		5.2500	3.0000	15.7500	15.7500	3.2500	55.4531	71.2031
	Vertical Leg		2.7344	5.5625	15.2100	0.1745	0.6875	1.2924	1.4669
2 (Right)	Horizontal Leg		5.2500	9.5000	49.8750	15.7500	3.2500	55.4531	71.2031
	Vertical Leg		2.7344	6.9375	18.9697	0.1745	0.6875	1.2924	1.4669
3	Web Plate		18.6875	6.2500	116.7969	0.3893	0.0000	0.0000	0.3893
4	Cover Plate		0.0000	6.2500	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>50.63</b>		<b>316.41</b>	<b>64.09</b>		<b>226.98</b>	<b>291.07</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	6.2500	in	S <sub>right</sub> =	46.57	in <sup>3</sup>	x-bar =	6.2500	in	S <sub>right</sub> =	46.57	in <sup>3</sup>
I <sub>y</sub> =	291.07	in <sup>4</sup>	S <sub>left</sub> =	46.57	in <sup>3</sup>	I <sub>y</sub> =	291.07	in <sup>4</sup>	S <sub>left</sub> =	46.57	in <sup>3</sup>
C <sub>right</sub> =	6.2500	in	A =	50.6250	in <sup>2</sup>	C <sub>right</sub> =	6.2500	in	A =	50.6250	in <sup>2</sup>
C <sub>left</sub> =	6.2500	in	r <sub>y</sub> =	2.3978	in	C <sub>left</sub> =	6.2500	in	r <sub>y</sub> =	2.3978	in

Non-composite Capacities*		
	AB	AI
M	2022.89 k-ft	2161.36 k-ft
V	357.68 k	357.68 k

\*Compact Section

F <sub>y</sub> =	33.00 ksi
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AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear





Made By DMP  
Checked By CTG

Date 4/12/2012  
Date 4/13/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

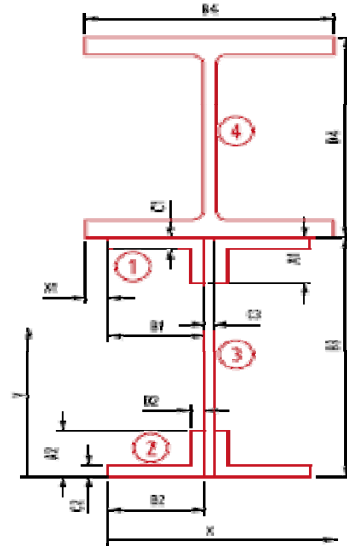
Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

Top Angles: Bottom Angles:  
 $A_1 = l_w = 4.0000$  in  $B_2 = l_h = 6.0000$  in  
 $C_1 = t_f = 0.8750$  in  $C_2 = t_f = 0.8750$  in  
 $B_1 = l_v = 6.0000$  in  $A_2 = l_v = 4.0000$  in

Web Plate: Rolled Section: W12x79  
 $C_3 = 0.5000$  in  $B4 = 12.1000$  in  
 $B_3 = 37.3750$  in  $D4 = 12.4000$  in  
 $X1 = -0.2000$  in  $I_x = 662$  in<sup>4</sup>  
 $I_y = 216$  in<sup>4</sup>  
 $A = 23.2000$  in<sup>2</sup>  
 $d_o = 24.0000$

\*Wide Flange is actually on the bottom  
 \*\*Be sure to flip  $S_{top}$  and  $S_{bottom}$



**X-Axis Section Properties:**

**Bracket C9 @ Floorbeam**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	10.5000	36.9375	387.8438	0.4466	10.5030	1158.2897	1158.7363
	Vertical Leg	5.4688	33.9375	185.5957	19.6308	7.5030	307.8645	327.4953
2	Horizontal Leg	10.5000	0.4375	4.5938	0.6699	25.9970	7096.3545	7097.0244
	Vertical Leg	5.4688	2.4375	13.3301	4.4505	23.9970	3149.2089	3153.6594
3	Web Plate	18.6875	18.6875	349.2227	2175.3661	7.7470	1121.5451	3296.9113
4	Rolled Section	23.2000	43.5750	1010.9400	662.0000	17.1405	6816.0954	7478.0954
<b>Total</b>		<b>73.83</b>		<b>1951.53</b>	<b>2862.56</b>		<b>19649.36</b>	<b>22511.92</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties					
y-bar =	26.4345	in	$S_{top} = 964.50$	in <sup>3</sup>	y-bar =	26.4345	in	$S_{top} = 964.50$	in <sup>3</sup>
$I_x =$	22511.92	in <sup>4</sup>	$S_{bott.} = 851.61$	in <sup>3</sup>	$I_x =$	22511.92	in <sup>4</sup>	$S_{bott.} = 851.61$	in <sup>3</sup>
$C_{top} =$	23.3405	in	$A = 73.8250$	in <sup>2</sup>	$C_{top} =$	23.3405	in	$A = 73.8250$	in <sup>2</sup>
$C_{bottom} =$	26.4345	in	$r_x = 17.4624$	in	$C_{bottom} =$	26.4345	in	$r_x = 17.4624$	in

Y-Axis Section Properties:

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	3.5000	2.0000	7.0000	4.6667	3.3111	38.3724	43.0391	
	Vertical Leg	4.4844	3.5625	15.9756	0.2861	1.7486	13.7118	13.9979	
1 (Right)	Horizontal Leg	3.5000	6.5000	22.7500	4.6667	1.1889	4.9470	9.6137	
	Vertical Leg	4.4844	4.9375	22.1416	0.2861	0.3736	0.6260	0.9121	
2 (Left)	Horizontal Leg	5.2500	3.0000	15.7500	15.7500	2.3111	28.0418	43.7918	
	Vertical Leg	2.7344	5.5625	15.2100	0.1745	0.2514	0.1728	0.3472	
2 (Right)	Horizontal Leg	5.2500	9.5000	49.8750	15.7500	4.1889	92.1201	107.8701	
	Vertical Leg	2.7344	6.9375	18.9697	0.1745	1.6264	7.2327	7.4071	
3	Web Plate	18.6875	4.2500	79.4219	0.3893	1.0611	21.0418	21.4312	
4	Rolled Section	23.2000	6.2500	145.0000	216.0000	0.9389	20.4505	236.4505	
<b>Total</b>		<b>73.83</b>		<b>392.09</b>	<b>258.14</b>		<b>226.72</b>	<b>484.86</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.3111	in	S <sub>right</sub> =	69.38	in <sup>3</sup>	x-bar =	5.3111	in	S <sub>right</sub> =	69.38	in <sup>3</sup>
I <sub>y</sub> =	484.86	in <sup>4</sup>	S <sub>left</sub> =	94.86	in <sup>3</sup>	I <sub>y</sub> =	484.86	in <sup>4</sup>	S <sub>left</sub> =	94.86	in <sup>3</sup>
C <sub>right</sub> =	6.9889	in	A =	73.8250	in <sup>2</sup>	C <sub>right</sub> =	6.9889	in	A =	73.8250	in <sup>2</sup>
C <sub>left</sub> =	5.1111	in	r <sub>y</sub> =	2.5628	in	C <sub>left</sub> =	5.1111	in	r <sub>y</sub> =	2.5628	in

Floorbeam Capacities

Non-composite Capacities*		
	AB	AI
M	3125.29 k-ft	3125.29 k-ft
V	436.56 k	436.56 k

\*Noncompact Section

F <sub>y</sub> =	33.00 ksi
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AB = As-Built  
AI = As-Inspected  
M = Moment  
V = Shear

## Bracket E4 @ Floorbeam



Made By DMP  
Checked By CTG

Date 4/12/2012  
Date 4/13/2012

Job No. P402110046  
Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

### Element Dimensions (without Section Losses):

#### Top Angles:

$A_1 = l_w = 4.0000$  in  
 $C_1 = t_f = 0.5000$  in  
 $B_1 = l_v = 6.0000$  in

#### Bottom Angles:

$B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.5000$  in  
 $A_2 = l_v = 4.0000$  in

#### Web Plate:

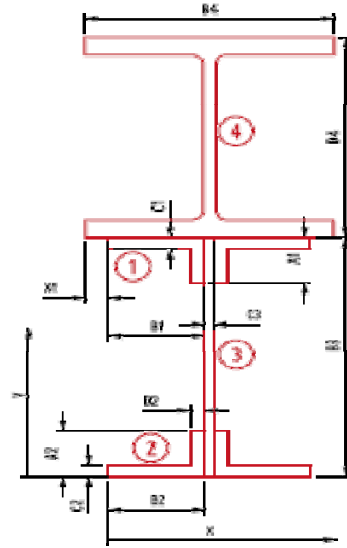
$C_3 = 0.3750$  in  
 $B_3 = 36.6250$  in  
 $X1 = -0.1875$  in  
 $d_o = 0.0000$

#### Rolled Section:

W12x65  
 $B4 = 12.0000$  in  
 $D4 = 12.1000$  in  
 $I_x = 533$  in<sup>4</sup>  
 $I_y = 174$  in<sup>4</sup>  
 $A = 19.1000$  in<sup>2</sup>

\*Wide Flange is actually on the bottom

\*\*Be sure to flip  $S_{top}$  and  $S_{bottom}$



### X-Axis Section Properties:

### Bracket E4 @ Floorbeam

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, gross}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	6.0000	36.3750	218.2500	0.0833	9.1529	502.6530	502.7364
	Vertical Leg	3.5000	33.3750	116.8125	13.8646	6.1529	132.5035	146.3680
2	Horizontal Leg	6.0000	0.2500	1.5000	0.1250	26.9721	4364.9663	4365.0913
	Vertical Leg	3.5000	2.2500	7.8750	3.5729	24.9721	2182.6209	2186.1938
3	Web Plate	13.7344	18.3125	251.5107	1535.2635	8.9096	1090.2490	2625.5125
4	Rolled Section	19.1000	42.6750	815.0925	533.0000	15.4529	4560.9272	5093.9272
<b>Total</b>		<b>51.83</b>		<b>1411.04</b>	<b>2085.91</b>		<b>12833.92</b>	<b>14919.83</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, loss}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar = 27.2221 in	$S_{top} = 693.85$ in <sup>3</sup>			y-bar = 27.2221 in	$S_{top} = 693.85$ in <sup>3</sup>		
$I_x = 14919.83$ in <sup>4</sup>	$S_{bottom} = 548.08$ in <sup>3</sup>			$I_x = 14919.83$ in <sup>4</sup>	$S_{bottom} = 548.08$ in <sup>3</sup>		
$C_{top} = 21.5029$ in	$A = 51.8344$ in <sup>2</sup>			$C_{top} = 21.5029$ in	$A = 51.8344$ in <sup>2</sup>		
$C_{bottom} = 27.2221$ in	$r_x = 16.9657$ in			$C_{bottom} = 27.2221$ in	$r_x = 16.9657$ in		

Y-Axis Section Properties:

Gross Section (without Losses)		A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>	
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )	
1 (Left)	Horizontal Leg	2.0000	2.0000	4.0000	2.6667	3.2910	21.6616	24.3282	
	Vertical Leg	2.7500	3.7500	10.3125	0.0573	1.5410	6.5305	6.5878	
1 (Right)	Horizontal Leg	2.0000	6.3750	12.7500	2.6667	1.0840	2.3500	5.0167	
	Vertical Leg	2.7500	4.6250	12.7188	0.0573	0.6660	1.2198	1.2771	
2 (Left)	Horizontal Leg	3.0000	3.0000	9.0000	9.0000	2.2910	15.7462	24.7462	
	Vertical Leg	1.7500	5.7500	10.0625	0.0365	0.4590	0.3687	0.4051	
2 (Right)	Horizontal Leg	3.0000	9.3750	28.1250	9.0000	4.0840	50.0368	59.0368	
	Vertical Leg	1.7500	6.6250	11.5938	0.0365	1.3340	3.1142	3.1506	
3	Web Plate	13.7344	4.1875	57.5127	0.1609	1.1035	16.7250	16.8859	
4	Rolled Section	19.1000	6.1875	118.1813	174.0000	0.8965	15.3504	189.3504	
<b>Total</b>		<b>51.83</b>		<b>274.26</b>	<b>197.68</b>		<b>133.10</b>	<b>330.78</b>	
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties							
x-bar =	5.2910	in	S <sub>right</sub> =	47.96	in <sup>3</sup>	x-bar =	5.2910	in	S <sub>right</sub> =	47.96	in <sup>3</sup>
I <sub>y</sub> =	330.78	in <sup>4</sup>	S <sub>left</sub> =	64.82	in <sup>3</sup>	I <sub>y</sub> =	330.78	in <sup>4</sup>	S <sub>left</sub> =	64.82	in <sup>3</sup>
C <sub>right</sub> =	6.8965	in	A =	51.8344	in <sup>2</sup>	C <sub>right</sub> =	6.8965	in	A =	51.8344	in <sup>2</sup>
C <sub>left</sub> =	5.1035	in	r <sub>y</sub> =	2.5262	in	C <sub>left</sub> =	5.1035	in	r <sub>y</sub> =	2.5262	in

Floorbeam Capacities

Non-composite Capacities*		
	AB	AI
M	1507.21 k-ft	1507.21 k-ft
V	402.82 k	402.82 k

\*Noncompact Section

F <sub>y</sub> =	33.00 ksi
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AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



Made By DMP  
 Checked By CTG

Date 4/12/2012  
 Date 4/13/2012

Job No. P402110046  
 Sheet No. \_\_\_\_\_

Calculations For: **CUY-2-1441**

**Element Dimensions (without Section Losses):**

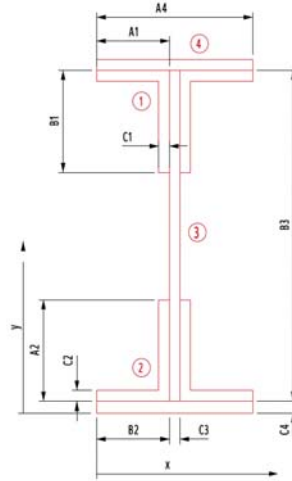
**Top Angles:**  
 $A_1 = l_w = 6.0000$  in  
 $C_1 = t_f = 0.5000$  in  
 $B_1 = l_v = 4.0000$  in

**Bottom Angles:**  
 $B_2 = l_h = 6.0000$  in  
 $C_2 = t_f = 0.5000$  in  
 $A_2 = l_v = 4.0000$  in

**Web Plate:**  
 $C_3 = 0.3750$  in  
 $*B_3 = 36.1250$  in

$d_0 = \text{N/A}$  in  
 $d_0 =$  stiffener spacing for shear check  
 Use "N/A" for no stiffeners

**Cover Plate:**  
 $C_4 = 0.0000$  in  
 $A_4 = 0.0000$  in



**Bracket H1 @ Floorbeam**

\*using average height of section

**X-Axis Section Properties:**

Gross Section (without Losses)		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, \text{gross}}$
Element	Description	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	Horizontal Leg	6.0000	35.8750	215.2500	0.1250	17.8125	1903.7109	1903.8359
	Vertical Leg	3.5000	33.8750	118.5625	3.5729	15.8125	875.1230	878.6960
2	Horizontal Leg	6.0000	0.2500	1.5000	0.1250	17.8125	1903.7109	1903.8359
	Vertical Leg	3.5000	2.2500	7.8750	3.5729	15.8125	875.1230	878.6960
3	Web Plate	13.5469	18.0625	244.6904	1473.2403	0.0000	0.0000	1473.2403
4	Cover Plate Top	0.0000	36.1250	0.0000	0.0000	18.0625	0.0000	0.0000
	Cover Plate Bottom	0.0000	0.0000	0.0000	0.0000	18.0625	0.0000	0.0000
<b>Total</b>		<b>32.55</b>		<b>587.88</b>	<b>1480.64</b>		<b>5557.67</b>	<b>7038.30</b>
Section Losses		A	y	Ay	$I_o$	d	$Ad^2$	$I_{x, \text{loss}}$
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties				As-Inspected Section Properties			
y-bar = 18.0625 in	$S_{top} = 389.66$ in <sup>3</sup>			y-bar = 18.0625 in	$S_{top} = 389.66$ in <sup>3</sup>		
$I_x = 7038.30$ in <sup>4</sup>	$S_{bott.} = 389.66$ in <sup>3</sup>			$I_x = 7038.30$ in <sup>4</sup>	$S_{bott.} = 389.66$ in <sup>3</sup>		
$C_{top} = 18.0625$ in	$A = 32.5469$ in <sup>2</sup>			$C_{top} = 18.0625$ in	$A = 32.5469$ in <sup>2</sup>		
$C_{bottom} = 18.0625$ in	$r_x = 14.7055$ in			$C_{bottom} = 18.0625$ in	$r_x = 14.7055$ in		
$J = 2.2183$	$Z = 446.7827$ in <sup>3</sup>				$Z = 785.9476$ in <sup>3</sup>		

Y-Axis Section Properties:

Gross Section (without Losses)			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, gross</sub>
Element	Description		(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1 (Left)	Horizontal Leg		3.0000	3.0000	9.0000	9.0000	3.1875	30.4805	39.4805
	Vertical Leg		1.7500	5.7500	10.0625	0.0365	0.4375	0.3350	0.3714
1 (Right)	Horizontal Leg		3.0000	9.3750	28.1250	9.0000	3.1875	30.4805	39.4805
	Vertical Leg		1.7500	6.6250	11.5938	0.0365	0.4375	0.3350	0.3714
2 (Left)	Horizontal Leg		3.0000	3.0000	9.0000	9.0000	3.1875	30.4805	39.4805
	Vertical Leg		1.7500	5.7500	10.0625	0.0365	0.4375	0.3350	0.3714
2 (Right)	Horizontal Leg		3.0000	9.3750	28.1250	9.0000	3.1875	30.4805	39.4805
	Vertical Leg		1.7500	6.6250	11.5938	0.0365	0.4375	0.3350	0.3714
3	Web Plate		13.5469	6.1875	83.8213	0.1588	0.0000	0.0000	0.1588
4	Cover Plate		0.0000	6.1875	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>32.55</b>		<b>201.38</b>	<b>36.30</b>		<b>123.26</b>	<b>159.57</b>
Section Losses			A	x	Ax	I <sub>o</sub>	d	Ad <sup>2</sup>	I <sub>y, loss</sub>
Loss #	b (in)	h (in)	(in <sup>2</sup> )	(in)	(in <sup>3</sup> )	(in <sup>4</sup> )	(in)	(in <sup>4</sup> )	(in <sup>4</sup> )
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>

As-Built Section Properties					As-Inspected Section Properties						
x-bar =	6.1875	in	S <sub>right</sub> =	25.79	in <sup>3</sup>	x-bar =	6.1875	in	S <sub>right</sub> =	25.79	in <sup>3</sup>
I <sub>y</sub> =	159.57	in <sup>4</sup>	S <sub>left</sub> =	25.79	in <sup>3</sup>	I <sub>y</sub> =	159.57	in <sup>4</sup>	S <sub>left</sub> =	25.79	in <sup>3</sup>
C <sub>right</sub> =	6.1875	in	A =	32.5469	in <sup>2</sup>	C <sub>right</sub> =	6.1875	in	A =	32.5469	in <sup>2</sup>
C <sub>left</sub> =	6.1875	in	r <sub>y</sub> =	2.2142	in	C <sub>left</sub> =	6.1875	in	r <sub>y</sub> =	2.2142	in

Non-composite Capacities*		
	AB	AI
M	1071.58 k-ft	1071.58 k-ft
V	255.33 k	255.33 k

\*Noncompact Section

F <sub>y</sub> =	33.00 ksi
------------------	-----------

AB = As-Built  
 AI = As-Inspected  
 M = Moment  
 V = Shear



# PIN & LINK RATING





Made By: GHD

Date: 4/10/2012

Job No.: P402110046

Checked By: CTG

Date: 7/13/2012

Sheet No.: \_\_\_\_\_

**Pin & Link Rating - As Built**

Pin & Link			MATERIAL (ksi)				PLATE DIMENSION							CAPACITIES (kips)		
Section	Bents	STAAD Beam	Fy (link)	Fcr (link)	ΦF (Pin)	Fu (web)	Pin		Link			Web		Shear in Pin (ΦFA)	Compression in Link (0.85AFcr)	Bearing in Web (1.8AFu)
							Diameter (in)	Length (in)	r (in)	Thickness (in)	Width (in)	Thickness (in)	Width (in)			
B	17N	274	36	34.70	18.75	60	4	14	0.36	1.25	9	1.5	4	471.24	663.55	648
	20N	1739	36	34.08	18.75	60	4	17	0.36	1.25	9	1.5	4	471.24	651.71	648
	17S	297	36	34.70	18.75	60	4	14	0.36	1.25	9	1.5	4	471.24	663.55	648
	20S	1741	36	34.08	18.75	60	4	17	0.36	1.25	9	1.5	4	471.24	651.71	648
D	23N	280	36	34.08	18.75	60	4	17	0.36	1.25	9	1.375	4	471.24	651.71	594
	26N	1792	36	34.66	18.75	60	4	17	0.43	1.5	10	1.875	4	471.24	883.94	810
	23S	301	36	34.08	18.75	60	4	17	0.36	1.25	9	1.375	4	471.24	651.71	594
	26S	1794	36	34.08	18.75	60	4	17	0.36	1.25	9	1.875	4	471.24	651.71	810
F	29N	286	36	32.17	18.75	60	4	24	0.36	1.25	9	1.5	4	471.24	615.18	648
	32N	1858	36	32.17	18.75	60	4	24	0.36	1.25	9	1.5	4	471.24	615.18	648
	29S	307	36	32.17	18.75	60	4	24	0.36	1.25	9	1.5	4	471.24	615.18	648
	32S	1862	36	32.17	18.75	60	4	24	0.36	1.25	9	1.5	4	471.24	615.18	648
H	34N	291	36	33.66	18.75	60	4	30	0.58	2	12	1.875	4	471.24	1373.33	810
	34S	312	36	33.66	18.75	60	4	30	0.58	2	12	1.875	4	471.24	1373.33	810





Made By: GHD  
 Checked By: CTG

Date: 4/10/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

**Pin & Link Rating - As Built**

Pin & Link			Dead Load	LIVE LOAD (SERVICE)					IMPACT	RATING FACTORS - Shear in Pin					
Section	Bents	STAAD Beam		V <sub>DL</sub> (k)	HS20	2F1	3F1	4F1		5C1	HS20		Ohio Legal Loads		
			V <sub>LL</sub> (k)		V <sub>LL</sub> (k)	V <sub>LL</sub> (k)	V <sub>LL</sub> (k)	V <sub>LL</sub> (k)	Inv.	Opr.	2F1	3F1	4F1	5C1	
B	17N	274	13.74	12.57	5.94	8.94	10.30	8.91	1.30	12.79	21.35	45.16	30.01	26.05	30.11
	20N	1739	19.44	19.3	9.11	13.76	15.83	13.43	1.30	8.19	13.68	28.97	19.18	16.67	19.65
	17S	297	12.33	13.6	6.45	9.77	11.19	9.62	1.30	11.87	19.81	41.76	27.57	24.07	28.00
	20S	1741	15.25	18.6	8.85	13.37	15.29	12.86	1.30	8.60	14.37	30.18	19.98	17.47	20.77
D	23N	280	26.57	26.68	13.04	19.54	22.37	19.06	1.30	5.80	9.69	19.82	13.22	11.55	13.56
	26N	1792	53.09	51.93	25.53	38.50	43.85	38.29	1.30	2.75	4.59	9.32	6.18	5.43	6.22
	23S	301	40.96	45.09	21.7	32.66	37.56	32.27	1.30	3.29	5.49	11.40	7.57	6.58	7.66
	26S	1794	20.64	24.22	11.66	17.64	20.22	16.74	1.30	6.50	10.86	22.55	14.91	13.01	15.71
F	29N	286	25.18	20.69	9.45	14.33	16.53	15.2	1.30	7.51	12.55	27.46	18.11	15.70	17.07
	32N	1858	23.4	19.85	9.06	13.71	15.86	14.53	1.30	7.87	13.15	28.79	19.03	16.45	17.95
	29S	307	20.23	21.1	9.67	14.60	16.89	14.45	1.30	7.48	12.48	27.23	18.03	15.59	18.22
	32S	1862	21.71	22.57	10.34	15.63	18.07	15.66	1.30	6.96	11.62	25.35	16.77	14.51	16.74
H	34N	291	27.02	63.94	30.44	45.66	52.23	45.87	1.27	2.47	4.13	8.68	5.79	5.06	5.76
	34S	312	38.51	43.76	21.99	32.91	37.24	41.1	1.30	3.41	5.70	11.33	7.57	6.69	6.06



Made By: GHD  
 Checked By: CTG

Date: 4/10/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

**Pin & Link Rating - As Built**

Pin & Link			Dead Load	LIVE LOAD (SERVICE)					IMPACT	RATING FACTORS - Compression in Link					
Section	Bents	STAAD Beam		V <sub>DL</sub> (k)	HS20	2F1	3F1	4F1		5C1	HS20		Ohio Legal Loads		
			V <sub>LL</sub> (k)		V <sub>LL</sub> (k)	V <sub>LL</sub> (k)	V <sub>LL</sub> (k)	V <sub>LL</sub> (k)	Inv.	Opr.	2F1	3F1	4F1	5C1	
B	17N	274	13.74	12.57	5.94	8.94	10.30	8.91	1.30	18.21	30.41	64.32	42.74	37.09	42.88
	20N	1739	19.44	19.3	9.11	13.76	15.83	13.43	1.30	11.51	19.21	40.69	26.94	23.42	27.60
	17S	297	12.33	13.6	6.45	9.77	11.19	9.62	1.30	16.88	28.19	59.40	39.22	34.24	39.83
	20S	1741	15.25	18.6	8.85	13.37	15.29	12.86	1.30	12.04	20.11	42.25	27.97	24.45	29.07
D	23N	280	26.57	26.68	13.04	19.54	22.37	19.06	1.30	8.20	13.69	28.01	18.69	16.32	19.16
	26N	1792	53.09	51.93	25.53	38.50	43.85	38.29	1.30	5.56	9.29	18.89	12.52	11.00	12.59
	23S	301	40.96	45.09	21.7	32.66	37.56	32.27	1.30	4.70	7.86	16.32	10.84	9.43	10.97
	26S	1794	20.64	24.22	11.66	17.64	20.22	16.74	1.30	9.15	15.27	31.71	20.96	18.29	22.09
F	29N	286	25.18	20.69	9.45	14.33	16.53	15.2	1.30	9.98	16.66	36.47	24.05	20.85	22.67
	32N	1858	23.4	19.85	9.06	13.71	15.86	14.53	1.30	10.44	17.44	38.19	25.24	21.82	23.81
	29S	307	20.23	21.1	9.67	14.60	16.89	14.45	1.30	9.89	16.52	36.03	23.87	20.63	24.11
	32S	1862	21.71	22.57	10.34	15.63	18.07	15.66	1.30	9.22	15.40	33.59	22.22	19.22	22.18
H	34N	291	27.02	63.94	30.44	45.66	52.23	45.87	1.27	7.59	12.68	26.63	17.75	15.52	17.67
	34S	312	38.51	43.76	21.99	32.91	37.24	41.1	1.30	10.72	17.90	35.61	23.79	21.03	19.05



Made By: GHD  
 Checked By: CTG

Date: 4/10/2012  
 Date: 4/13/2012

Job No.: P402110046  
 Sheet No.: \_\_\_\_\_

**Pin & Link Rating - As Built**

Pin & Link			Dead Load	LIVE LOAD (SERVICE)					IMPACT	RATING FACTORS - Bearing in Web					
Section	Bents	STAAD Beam		V <sub>DL</sub> (k)	HS20	2F1	3F1	4F1		5C1	HS20		Ohio Legal Loads		
			V <sub>LL</sub> (k)		V <sub>LL</sub> (k)	V <sub>LL</sub> (k)	V <sub>LL</sub> (k)	V <sub>LL</sub> (k)	Inv.	Opr.	2F1	3F1	4F1	5C1	
B	17N	274	13.74	12.57	5.94	8.94	10.30	8.91	1.30	17.77	29.68	62.77	41.71	36.20	41.85
	20N	1739	19.44	19.3	9.11	13.76	15.83	13.43	1.30	11.44	19.10	40.45	26.78	23.28	27.44
	17S	297	12.33	13.6	6.45	9.77	11.19	9.62	1.30	16.47	27.51	57.98	38.28	33.42	38.87
	20S	1741	15.25	18.6	8.85	13.37	15.29	12.86	1.30	11.97	19.99	42.00	27.80	24.31	28.90
D	23N	280	26.57	26.68	13.04	19.54	22.37	19.06	1.30	7.43	12.41	25.39	16.94	14.80	17.37
	26N	1792	53.09	51.93	25.53	38.50	43.85	38.29	1.30	5.06	8.45	17.17	11.39	10.00	11.45
	23S	301	40.96	45.09	21.7	32.66	37.56	32.27	1.30	4.25	7.10	14.75	9.80	8.52	9.92
	26S	1794	20.64	24.22	11.66	17.64	20.22	16.74	1.30	11.46	19.14	39.74	26.27	22.92	27.68
F	29N	286	25.18	20.69	9.45	14.33	16.53	15.2	1.30	10.54	17.60	38.53	25.41	22.02	23.95
	32N	1858	23.4	19.85	9.06	13.71	15.86	14.53	1.30	11.03	18.42	40.33	26.65	23.04	25.15
	29S	307	20.23	21.1	9.67	14.60	16.89	14.45	1.30	10.44	17.44	38.04	25.20	21.78	25.46
	32S	1862	21.71	22.57	10.34	15.63	18.07	15.66	1.30	9.73	16.26	35.47	23.46	20.30	23.42
H	34N	291	27.02	63.94	30.44	45.66	52.23	45.87	1.27	4.40	7.34	15.42	10.28	8.99	10.23
	34S	312	38.51	43.76	21.99	32.91	37.24	41.1	1.30	6.16	10.28	20.45	13.66	12.07	10.94

---

# STAAD MODEL INPUT

- GEOMETRY
- DEAD LOADS

## TRESTLE - EAST APPROACH

### DEAD LOADS:

① WEARING SURFACE:  $1.25'' \times \frac{1}{12} \times (61.5' - 11.75' \times 2) \times 0.15 \times \frac{1}{9} = \underline{0.101 \text{ k/ft}}$

② PARAPET:

OUTSIDE: AREA =  $(9'' + 12'') \times 29'' \times \frac{1}{2} + (14 + 21) \times 10 \times \frac{1}{2} + 3 \times 2$   
 $= 542.5 \text{ in}^2$

MEDIAN: AREA =  $9 \times 10 + (9 + 13) \times 19 \times \frac{1}{2} + (13 + 27) \times 10 \times \frac{1}{2} + 3 \times 27$   
 $= 580 \text{ in}^2$

WP =  $(542.5 \times 2 + 580) \times \frac{1}{144} \times 0.113 \times \frac{1}{9} = \underline{0.145 \text{ k/ft}}$

③ DECK:

S2 - S6:  $6.75'' \times \frac{1}{12} \times 7' \times 0.113 + \left[ (3' \times 2 + 11.09') \times 11.77' - 11.09' \times 9.77' \right] \times \frac{1}{144} \times 0.113$   
 $= \underline{0.462 \text{ k/ft}}$

S1, S7:  $6.75'' \times \frac{1}{12} \times \left( \frac{7' + 6.58'}{2} \right) \times 0.113 + \left[ (3' + \frac{11.09'}{2} + \frac{5.77'}{2} \times 12) \times 11.77' - 11.09' \times 9.77' \right] \times \frac{1}{144} \times 0.113$   
 $= \underline{0.459 \text{ k/ft. S1. (0.992 k/ft. S7)}}$

F1, F2: OVERHANG = 5.98' F1 (1.26' F2)

$(6.75'' + 11.77'') \times \frac{1}{12} \times \left( \frac{5.77'}{2} + \frac{6.58'}{2} + 1.26' \right) \times 0.113 - 8.00 \times 0.75 \times \frac{1}{144} \times 0.113$   
 $= \underline{0.707 \text{ k/ft F1:}}$   
 $\underline{0.36 \text{ k/ft F2:}}$

④ STAY IN PLACE FORM: 2 PSF

S1, S7  $(7' + \frac{5.77'}{2}) \times \frac{1}{2} \times 0.002 = \underline{0.013 \text{ k/ft S1}}$   
 $\underline{0.014 \text{ k/ft S7}}$

S2 - S6  $7' \times 0.002 = \underline{0.014 \text{ k/ft}}$

F1, F2  $\left\{ \begin{array}{l} 5.77' \\ 6.58' \end{array} \right\} \times \frac{1}{2} \times 0.002 = \underline{0.006 \text{ k/ft F1}}$   
 $\underline{0.007 \text{ k/ft F2}}$

TOTAL DL ON STRINGERS:

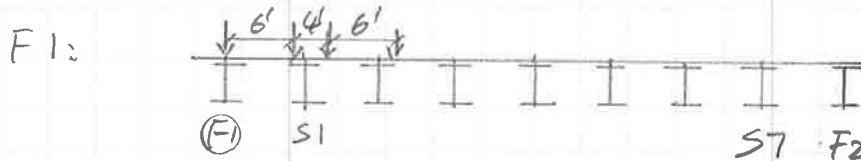
$$F1, F2 = 0.101 + 0.145 + \underbrace{0.707}_{0.36} + 0.006 = \frac{0.959 \text{ K/ft}}{F1} \quad \frac{0.612 \text{ K/ft}}{F2}$$

$$S1, S7 = 0.101 + 0.145 + \underbrace{0.459}_{0.492} + \underbrace{0.013}_{0.014} = \frac{0.718 \text{ K/ft}}{S1} \quad \frac{0.752 \text{ K/ft}}{S7}$$

$$S2-S6 = 0.101 + 0.145 + 0.462 + 0.014 = \frac{0.722 \text{ K/ft}}{S2-S6}$$

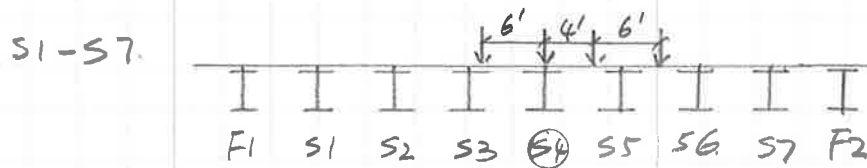
LIVE LOADS:

(1) STRINGERS:

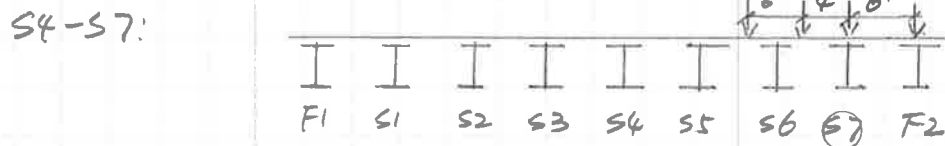
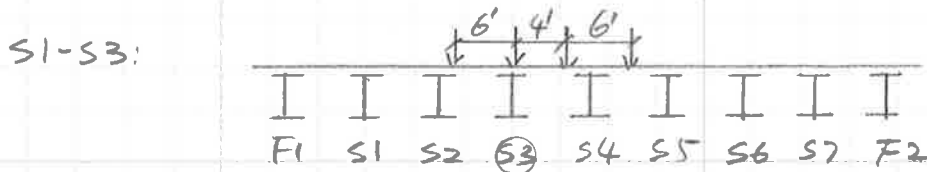


F2 : SIMILAR TO F1

SECTION A, B, G, H:

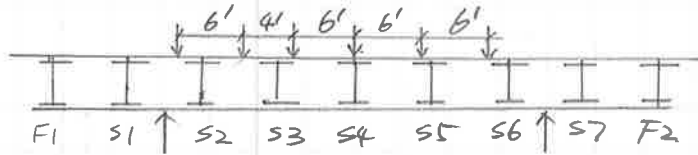


SECTION C, D, E, F:



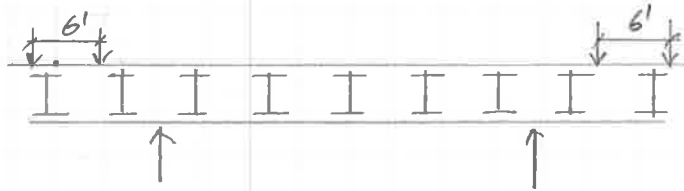
(3) FLOOR BEAMS:

MAX POSITIVE MOMENT & MAX SHEAR:



MULTIPLE PRESENCE FACTOR: 0.9

MAX NEGATIVE MOMENT:



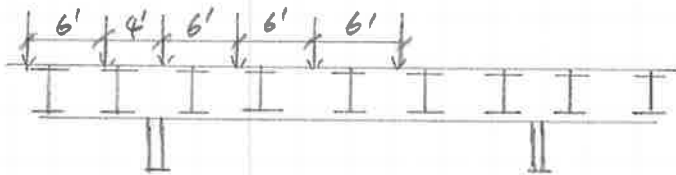
(3) BRACKETS:

MAX NEGATIVE MOMENT AND SHEAR:

SAME AS FLOOR BEAM NEGATIVE MOMENT.

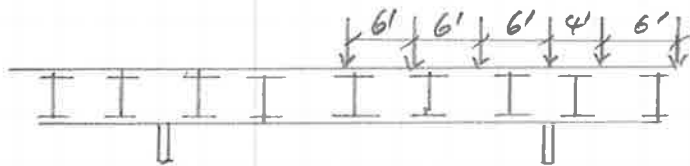
(4) COLUMNS: GIRDERS

NORTH COLUMNS: (NORTH GIRDERS)



MULTIPLE PRESENCE FACTOR = 0.9

SOUTH COLUMNS: (SOUTH GIRDERS)



MULTIPLE PRESENCE FACTOR = 0.9

Main Ave. - Trestle : Centrifugal Force

$$C = .00117 S^2 D = \frac{6.68 S^2}{R}$$

$$S = 50 \text{ mph}$$

$$R = 1000 \text{ ft}$$

$$\frac{6.68 (50)^2}{1000} = 16.7 \%$$



## TRESTLE - EAST APPROACH.

### CENTRIFUGAL FORCE:

$$C = 6.68 S^2 / R = 6.68 \times 50^2 / 1000 = 16.7\%$$

$$2 \times 16.7\% \times 6' / (6' \text{ WHEEL SPACING}) = 0.334$$

$$\text{LEFT WHEEL LOAD} = (1 - 0.334) \cdot W = 0.666 W.$$

$$\text{RIGHT WHEEL LOAD} = (1 + 0.334) W = 1.334 W. \quad \text{FOR F2}$$

$$\text{CENTROID OF AXLE} = \frac{0.666}{2} \times 6' = 1.998'$$

$$\text{EQUIVALENT WHEEL SPACING} = 1.998 \times 2 = 3.996' \quad \text{FOR SOUTH GIRDER, COLUMN.}$$

C.F. FOR COLUMNS: 3 LANES:

$$\text{HS20: } 0.167 \times 72K \times 3 \times 0.9 = 32.46K$$

$$2F1: 0.167 \times 30K \times 3 \times 0.9 = 13.53K$$

$$3F1: 0.167 \times 46K \times 3 \times 0.9 = 20.74K$$

$$4F1: 0.167 \times 54K \times 3 \times 0.9 = 24.35K$$

$$5C1: 0.167 \times 80K \times 3 \times 0.9 = 36.07K$$

FOR EACH SECTION.

SECTIONS:

B C D E F

# COLUMNS:

4 8 4 8 4

STAAD SPACE DXF IMPORT OF TRESTLE FRAMING.DXF

START JOB INFORMATION

JOB NAME Main Ave\_East Approach\_Trestle

ENGINEER NAME GHD

ENGINEER DATE 07-Mar-12

JOB COMMENT Coped Stringers are modeled as simple spans

END JOB INFORMATION

INPUT WIDTH 79

UNIT FEET KIP

JOINT COORDINATES

1 -1.01102 0 684.551; 2 55.989 0 684.551; 3 -1.01102 0 677.551;  
4 55.989 0 677.551; 5 -1.01102 0 670.551; 6 55.989 0 670.551;  
7 -1.01102 0 698.551; 8 55.989 0 698.551; 9 -1.01102 0 705.551;  
10 55.989 0 705.551; 11 -1.01102 0 712.551; 12 55.989 0 712.551;  
13 -1.01102 0 691.551; 14 55.989 0 691.551; 15 112.989 0 691.551;  
16 112.989 0 698.551; 17 112.989 0 705.551; 18 112.989 0 712.551;  
19 -1.01102 0 664.41; 20 55.989 0 664.41; 21 -1.01102 0 718.692;  
22 55.989 0 718.692; 23 127.239 0 664.41; 24 127.239 0 718.692;  
25 13.239 0 718.692; 26 13.239 0 712.551; 27 27.489 0 718.692;  
28 27.489 0 664.41; 29 41.739 0 718.692; 30 41.739 0 712.551;  
31 70.239 0 718.692; 32 70.239 0 712.551; 33 84.489 0 718.692;  
34 84.489 0 664.41; 35 98.739 0 718.692; 36 98.739 0 712.551;  
37 112.989 0 718.692; 38 112.989 0 664.41; 39 127.239 0 712.213;  
40 140.846 0 664.402; 41 142.132 0 718.679; 42 112.989 0 670.551;  
43 112.989 0 677.551; 44 112.989 0 684.551; 45 168.963 0 669.225;  
46 169.294 0 676.217; 47 169.626 0 683.209; 48 169.957 0 690.201;  
49 170.288 0 697.193; 50 170.62 0 704.185; 51 170.951 0 711.178;  
52 154.781 0 664.248; 53 154.969 0 669.556; 54 168.71 0 663.894;  
55 171.28 0 718.12; 56 182.949 0 663.325; 57 183.197 0 668.55;  
58 197.178 0 662.544; 59 199.749 0 716.775; 60 211.398 0 661.563;  
61 211.665 0 667.201; 62 225.607 0 660.369; 63 228.179 0 714.639;  
64 273.455 0 654.797; 65 284.811 0 708.005; 66 225.899 0 666.526;  
67 226.23 0 673.518; 68 226.562 0 680.51; 69 226.893 0 687.502;  
70 227.225 0 694.494; 71 227.556 0 701.487; 72 227.887 0 708.479;  
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1357 655.104 0 566.196; 1358 638.458 0 535.407; 1359 740.601 0 508.962;  
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MEMBER INCIDENCES

1 1 471; 2 3 267; 3 5 262; 4 7 462; 5 9 266; 6 11 26; 7 13 466; 8 14 474;  
9 8 477; 10 10 272; 11 12 32; 12 19 263; 13 21 25; 14 20 271; 15 22 31;  
16 25 26; 17 27 483; 18 21 11; 19 29 30; 20 22 12; 21 31 32; 22 33 484;  
23 35 36; 24 37 18; 25 24 39; 26 40 491; 27 24 41; 28 23 40; 29 6 270;  
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37 17 276; 38 18 39; 39 52 53; 40 54 45; 41 56 57; 42 58 509; 43 60 61;  
44 62 66; 45 64 83; 46 61 66; 47 391 67; 48 513 68; 49 515 69; 50 517 70;  
51 392 71; 52 282 72; 53 73 288; 54 75 533; 55 77 386; 56 79 549; 57 81 560;  
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84 120 123; 85 122 123; 86 124 125; 87 126 127; 88 128 129; 89 130 131;  
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96 591 132; 97 592 130; 98 374 128; 99 300 126; 100 138 139; 101 140 161;  
102 142 601; 103 144 608; 104 146 615; 105 148 622; 106 150 168; 107 152 153;  
109 155 156; 110 157 158; 111 159 177; 112 403 161; 113 635 162; 114 369 163;  
115 637 164; 116 639 165; 117 407 166; 118 370 167; 119 161 608; 120 163 607;  
121 162 606; 122 164 605; 123 165 604; 124 167 603; 125 166 602; 126 175 176;  
127 168 153; 128 170 645; 129 169 365; 130 171 648; 131 172 651; 132 173 880;  
133 174 305; 134 319 184; 135 658 186; 136 346 188; 137 665 190; 139 345 194;  
140 352 196; 141 198 201; 142 179 359; 143 178 678; 144 180 681; 145 181 684;  
146 182 360; 147 199 313; 148 200 201; 149 204 198; 150 311 199; 151 203 204;  
152 205 198; 153 207 197; 154 249 674; 155 211 196; 156 213 674; 157 215 216;  
158 217 697; 159 219 705; 160 221 713; 161 223 224; 162 225 722; 163 227 228;



158 217 697; 159 219 705; 160 221 713; 161 223 224; 162 225 722; 163 227 228;  
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 351 279 55; 352 55 281; 353 281 59; 354 59 283; 355 283 63; 356 63 285;  
 357 285 91; 358 91 287; 359 287 65; 360 65 289; 361 289 101; 362 101 291;  
 363 291 97; 364 97 293; 365 293 111; 366 111 295; 367 295 105; 368 105 297;  
 369 297 115; 370 115 299; 371 299 107; 372 107 301; 373 301 137; 374 137 121;  
 375 121 404; 376 404 143; 377 143 406; 378 406 141; 379 141 145; 380 145 303;  
 381 303 154; 382 154 306; 383 306 147; 384 147 308; 385 308 149; 386 149 310;  
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 435 474 480; 436 477 474; 437 479 275; 438 472 479; 439 475 472; 440 471 267;  
 441 481 269; 442 481 2; 443 482 264; 444 483 30; 445 484 36; 446 483 1338;  
 447 484 1315; 448 485 398; 449 482 28; 450 485 34; 451 42 38; 452 1339 42;  
 453 44 43; 454 15 44; 455 16 15; 456 1340 17; 457 1316 500; 458 488 499;  
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 483 395 46; 484 498 395; 485 277 498; 486 396 50; 487 499 396; 488 276 499;  
 489 278 51; 490 500 278; 491 51 55; 492 1317 51; 493 50 1317; 494 49 50;  
 495 48 49; 496 47 48; 497 46 47; 498 1293 46; 499 45 1293; 500 501 59;  
 501 1341 501; 502 503 1341; 503 504 503; 504 505 504; 505 506 505; 506 507 506;  
 507 1342 507; 508 509 1342; 509 72 63; 510 1318 72; 511 71 1318; 512 70 71;  
 513 69 70; 514 68 69; 515 67 68; 516 1294 67; 517 66 1294; 518 73 65;  
 519 1343 73; 520 77 1343; 521 75 77; 522 79 75; 523 81 79; 524 85 81;  
 525 1344 85; 526 83 1344; 527 45 57; 528 509 1270; 529 61 1271; 530 46 393;  
 531 507 1272; 532 391 1273; 533 47 512; 534 506 512; 535 513 506; 536 48 514;  
 537 505 514; 538 515 505; 539 49 516; 540 504 516; 541 517 504; 542 50 394;  
 543 503 394; 544 392 503; 545 51 280; 546 501 280; 547 282 501; 548 298 74;  
 549 518 909; 550 296 923; 551 519 910; 552 294 930; 553 520 294; 554 292 520;  
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 615 566 921; 616 377 929; 617 567 922; 618 379 936; 619 568 929; 620 381 568;  
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627 571 387; 628 389 571; 629 572 81; 630 573 572; 631 574 573; 632 575 79;  
633 576 575; 634 577 576; 635 578 75; 636 579 578; 637 580 579; 638 388 77;  
639 581 388; 640 390 581; 641 284 89; 642 95 83; 643 286 73; 644 89 91;  
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674 526 535; 675 542 526; 676 553 542; 677 567 553; 678 1347 567; 679 562 1347;  
680 74 107; 681 1348 74; 682 78 1348; 683 76 78; 684 80 76; 685 82 80;  
686 86 82; 687 1349 86; 688 84 1349; 689 520 111; 690 1350 520; 691 536 1350;  
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698 518 115; 699 1352 518; 700 534 1352; 701 524 534; 702 540 524; 703 551 540;  
704 566 551; 705 1297 566; 706 561 1297; 707 127 121; 708 1322 127;  
709 129 1322; 710 131 129; 711 133 131; 712 135 133; 713 125 135; 714 1299 125;  
715 123 1299; 716 126 137; 717 1321 126; 718 128 1321; 719 130 128;  
720 132 130; 721 134 132; 722 124 134; 723 1298 124; 724 122 1298; 725 84 139;  
726 86 373; 727 82 590; 728 80 591; 729 76 592; 730 78 374; 731 74 300;  
732 166 141; 733 1323 166; 734 167 1323; 735 165 167; 736 164 165; 737 162 164;  
738 163 162; 739 1300 163; 740 161 1300; 741 593 143; 742 1353 593;  
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760 1325 609; 761 610 1325; 762 611 610; 763 612 611; 764 613 612; 765 614 613;  
766 1302 614; 767 615 1302; 768 616 149; 769 1326 616; 770 617 1326;  
771 618 617; 772 619 618; 773 620 619; 774 621 620; 775 1303 621; 776 622 1303;  
778 172 173; 779 171 172; 780 170 171; 781 169 170; 782 1355 169; 783 168 1355;  
784 174 154; 785 1356 174; 800 183 160; 801 1357 183; 802 182 1357;  
803 181 182; 804 180 181; 805 178 180; 806 179 178; 807 1358 179; 808 177 1358;  
809 123 401; 810 401 944; 811 601 937; 812 135 634; 813 634 945; 814 598 938;  
815 125 371; 816 371 946; 817 599 939; 818 133 636; 819 636 947; 820 597 940;  
821 131 638; 822 638 948; 823 596 941; 824 127 405; 825 405 949; 826 593 942;  
827 129 372; 828 372 950; 829 595 943; 830 176 168; 831 608 176; 832 607 833;  
833 640 170; 834 606 640; 835 641 171; 836 605 641; 837 642 172; 838 604 642;  
839 368 173; 840 603 368; 841 302 174; 842 602 302; 843 158 177; 844 622 951;  
845 156 972; 846 615 952; 847 153 965; 848 643 178; 849 620 953; 850 644 973;  
851 613 954; 852 645 966; 853 361 179; 854 621 955; 855 363 974; 856 614 956;  
857 365 967; 858 646 180; 859 619 957; 860 647 975; 861 612 958; 862 648 968;  
863 649 181; 864 618 959; 865 650 976; 866 611 960; 867 651 969; 868 362 182;  
869 617 961; 870 364 977; 871 610 962; 872 309 183; 873 616 963; 874 307 978;  
875 609 964; 876 305 970; 877 185 315; 878 652 315; 879 317 652; 880 317 653;  
881 653 319; 882 187 654; 883 655 654; 884 656 655; 885 656 657; 886 657 658;  
887 189 356; 888 659 356; 889 348 659; 890 348 660; 891 660 346; 892 191 661;  
893 662 661; 894 663 662; 895 663 664; 896 664 665; 897 193 666; 898 667 666;  
899 668 667; 900 668 669; 901 669 670; 902 670 242; 903 195 355; 904 671 355;  
905 347 671; 906 347 672; 907 672 345; 908 197 216; 909 673 216; 910 354 673;  
911 354 674; 912 674 352; 913 201 197; 914 357 195; 915 675 357; 916 359 675;  
917 676 193; 918 677 676; 919 678 677; 920 679 191; 921 680 679; 922 681 680;  
923 682 187; 924 683 682; 925 684 683; 926 358 189; 927 685 358; 928 360 685;  
929 313 185; 930 177 204; 931 183 311; 932 199 206; 933 1327 199; 934 685 1327;  
935 683 685; 936 680 683; 937 677 680; 938 675 677; 939 1304 675; 940 198 1304;  
941 185 208; 942 1328 185; 943 189 1328; 944 187 189; 945 191 187; 946 193 191;  
947 195 193; 948 1305 195; 949 197 1305; 950 653 210; 951 1329 653;  
952 660 1329; 953 657 660; 954 664 657; 955 669 664; 956 672 669; 957 1306 672;  
958 674 1306; 959 184 212; 960 1330 184; 962 188 1330; 963 186 188;  
964 190 186; 965 242 190; 966 194 242; 967 1307 194; 968 196 1307; 969 652 214;  
970 1359 652; 971 659 1359; 972 655 659; 973 662 655; 974 667 662; 975 671 667;  
976 1360 671; 977 673 1360; 978 689 218; 979 1361 689; 980 691 1361;  
981 692 691; 982 693 692; 983 694 693; 984 695 694; 985 1362 695; 986 697 1362;  
987 698 220; 988 1331 698; 989 699 1331; 990 700 699; 991 701 700; 992 702 701;  
993 703 702; 994 1363 703; 995 705 1363; 996 706 222; 997 1364 706;  
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1008 717 716; 1009 718 717; 1010 719 718; 1011 720 719; 1012 1366 720;  
1013 722 1366; 1014 723 230; 1015 1332 723; 1016 724 1332; 1017 725 724;  
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1185 338 699; 1186 691 338; 1187 344 691; 1188 818 1025; 1189 819 1026;  
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1200 714 1275; 1201 706 327; 1202 698 1277; 1203 323 1276; 1204 689 323;  
1205 321 689; 1206 260 250; 1207 258 260; 1208 256 258; 1209 254 256;  
1210 252 254; 1211 239 252; 1212 237 239; 1213 235 237; 1214 233 235;  
1215 231 233; 1216 229 231; 1217 227 229; 1218 225 227; 1219 223 225;  
1220 221 223; 1221 339 221; 1222 219 339; 1223 341 219; 1224 217 341;  
1225 349 217; 1226 211 349; 1227 351 211; 1228 261 251; 1229 259 261;  
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1235 236 238; 1236 234 236; 1237 232 234; 1238 230 232; 1239 330 230;  
1240 226 330; 1241 328 226; 1242 222 328; 1243 326 222; 1244 220 326;  
1245 324 220; 1246 218 324; 1247 322 218; 1248 212 322; 1249 320 212;  
1250 822 253; 1251 1375 822; 1252 817 1375; 1253 777 817; 1254 807 777;  
1255 787 807; 1256 797 787; 1257 1376 797; 1258 802 1376; 1259 821 255;  
1260 1377 821; 1261 816 1377; 1262 776 816; 1263 806 776; 1264 786 806;  
1265 796 786; 1266 1378 796; 1267 801 1378; 1268 820 257; 1269 1334 820;  
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START USER TABLE

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*C20-S-D
*78.72 3579.3 2425.67 17.92 0 0 16.64 16
C21-N
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C21-S
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C22-S
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C23-S
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*C23-S-D
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C24
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C26
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*C26-D
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C27-D
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C28-U
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C28-D
70.9 3228.55 2028.18 14.42 0 0 16.64 16
C29
94.9 5314.37 2598.8 39.54 0 0 16.64 16
*C29-D
*74.9 3553.09 2125.9 16.32 0 0 16.64 16
C30
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C31
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C32-N-D
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C32-S
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C33-N
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C33-S
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C36
150.72 4115.05 11093.2 301.42 0 0 16.64 16
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G14-15-2
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G16-17-2
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G17-18-N-1
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G17-18-N-2
57.3 13977.9 507.44 4.775 0 0 36.6 16
G17-18-N-3
59.52 18022 507.49 4.96 0 0 41.04 16

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G17-18-S-1  
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G17-18-S-2  
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G17-18-S-3  
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G18-19-2  
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G18-19-3  
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G18-19-4  
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G19-20-N-2  
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G19-20-N-3  
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G19-20-S-1  
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G19-20-S-2  
63.42 26560.4 507.57 5.29 0 0 48.84 16  
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G20-21-N-6  
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114.35 59015 1446.19 65.54 0 0 49.2 16  
G20-21-S-4  
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G20-21-S-7  
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G21-22-N-3  
81.47 45648.3 1104.93 11.24 0 0 55.44 16  
G21-22-N-4  
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G21-22-N-5  
90.65 43954.8 1616.87 19.07 0 0 49.8 16  
G21-22-N-6  
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G21-22-N-7  
82.97 51294.2 1104.96 11.37 0 0 58.44 16  
G21-22-N-8  
85.49 61623.3 1105.01 11.58 0 0 63.48 16  
G21-22-S-1  
84.71 58311.6 678.33 11.51 0 0 61.92 16

84.71	58311.6	678.33	11.51	0	0	61.92	16
G21-22-S-2							
82.13	48086.9	678.27	11.3	0	0	56.76	16
G21-22-S-3							
99.91	54851.5	1104.89	29.34	0	0	52.32	16
G21-22-S-4							
84.71	58311.6	678.33	11.51	0	0	49.32	16
G21-22-S-5							
99.91	54851.5	1104.89	29.34	0	0	52.32	16
G21-22-S-6							
82.19	48312.1	678.27	11.3	0	0	56.88	16
G21-22-S-7							
84.77	58562.7	678.33	11.52	0	0	62.04	16
G22-23-N-1							
80.65	54101.6	934.33	10.24	0	0	61.8	16
G22-23-N-2							
77.89	43896.5	934.27	10.01	0	0	56.28	16
G22-23-N-3							
75.13	34878.1	934.21	9.78	0	0	50.76	16
G22-23-N-4							
77.65	43065.8	934.26	9.99	0	0	55.8	16
G22-23-N-5							
80.47	53399.1	934.32	10.22	0	0	61.44	16
G22-23-S-1							
93.31	69201.4	849.01	16.1	0	0	63.12	16
G22-23-S-2							
90.79	57696.7	848.95	15.89	0	0	58.08	16
G22-23-S-3							
88.39	47812.4	848.9	15.694	0	0	53.28	16
G22-23-S-4							
114.53	59918.5	1446.2	65.56	0	0	49.56	16
G22-23-S-5							
114.89	61747.8	1446.21	65.59	0	0	50.28	16
G22-23-S-6							
89.65	52872.9	848.93	15.8	0	0	55.8	16
G22-23-S-7							
91.63	61401.9	848.97	15.96	0	0	59.76	16
G22-23-S-8							
93.37	69489.6	849.01	16.11	0	0	63.24	16
G23-24-N-1							
64.1	39642	807.08	4.71	0	0	61.32	16
G23-24-N-2							
61.64	32789.4	807.03	4.5	0	0	56.4	16
G23-24-N-3							
63.86	38939.8	807.08	4.69	0	0	60.84	16
G23-24-S-1							
48.93	29773.8	461.34	2.59	0	0	62.64	16
G23-24-S-2							
56.3	36754.9	461.33	3.22	0	0	60.96	16
G24-25-N-1							
69.96	45268.8	849.04	5.83	0	0	61.92	16
G24-25-N-2							
67.38	37204.7	848.99	5.615	0	0	56.76	16
G24-25-N-3							
65.1	30826	848.94	5.425	0	0	52.2	16
G24-25-N-4							
99.6	50712.2	2384.91	49.74	0	0	49.2	16
G24-25-N-5							
65.1	30826	848.94	5.425	0	0	52.2	16
G24-25-N-6							
67.38	37204.7	848.99	5.615	0	0	56.76	16
G24-25-N-7							
69.96	45268.8	849.04	5.83	0	0	61.92	16
G24-25-S-1							
69.96	45268.8	507.71	5.83	0	0	61.92	16
G24-25-S-2							
67.38	37204.7	507.65	5.615	0	0	56.76	16
G24-25-S-3							
64.68	29725.5	507.6	5.39	0	0	51.36	16
G24-25-S-4							
75.48	34307.5	763.57	11.1025	0	0	48.96	16
G24-25-S-5							
64.68	29725.5	507.6	5.39	0	0	51.36	16
G24-25-S-6							
67.38	37204.7	507.65	5.615	0	0	56.76	16
G24-25-S-7							
70.02	45467.3	507.71	5.835	0	0	62.04	16
G25-26-N-1							
56.16	36273.2	802.66	3.216	0	0	60.6	16

56.16 36273.2 802.66 3.216 0 0 60.6 16  
G25-26-N-2  
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G25-26-S-1  
56.39 37078 461.33 3.23 0 0 61.2 16  
G25-26-S-2  
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G25-26-S-3  
48.61 28852.7 461.33 2.57 0 0 61.8 16  
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G26-27-N-2  
90.73 57436.9 1446.29 15.89 0 0 57.96 16  
G26-27-N-3  
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114.95 62055.6 2640.87 65.59 0 0 50.4 16  
G26-27-N-5  
126.29 67128.3 3152.86 110.72 0 0 49.08 16  
G26-27-N-6  
114.83 61440.9 2640.87 65.58 0 0 50.16 16  
G26-27-N-7  
88.39 47812.4 1446.24 15.69 0 0 53.28 16  
G26-27-N-8  
90.73 57436.9 1446.29 15.89 0 0 57.96 16  
G26-27-N-9  
93.01 67770.3 1446.33 16.08 0 0 62.52 16  
G26-27-S-1  
93.07 68055.1 1446.33 16.08 0 0 62.64 16  
G26-27-S-2  
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G26-27-S-3  
88.45 48046.9 1446.24 15.7 0 0 53.4 16  
G26-27-S-4  
114.53 59918.5 2640.87 65.56 0 0 49.56 16  
G26-27-S-5  
88.39 47812.4 1446.24 15.694 0 0 53.28 16  
G26-27-S-6  
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G26-27-S-7  
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G27-28-2  
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G27-28-3  
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G27-28-4  
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G27-28-5  
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G28-29-N-1  
93.01 67770.3 1446.33 16.08 0 0 62.52 16  
G28-29-N-2  
90.73 57436.9 1446.29 15.89 0 0 57.96 16  
G28-29-N-3  
88.39 47812.4 1446.24 15.69 0 0 53.28 16  
G28-29-N-4  
114.83 61440.9 2640.87 65.58 0 0 50.16 16  
G28-29-N-5  
126.29 67128.3 3152.86 110.73 0 0 49.08 16  
G28-29-N-6  
114.95 62055.6 2640.87 65.59 0 0 50.4 16  
G28-29-N-7  
88.45 48046.9 1446.24 15.7 0 0 53.4 16  
G28-29-N-8  
90.73 57436.9 1446.29 15.89 0 0 57.96 16  
G28-29-N-9  
93.01 67770.3 1446.33 16.08 0 0 62.52 16  
G28-29-S-1  
93.01 67770.3 1446.33 16.08 0 0 62.52 16  
G28-29-S-2  
90.73 57436.9 1446.29 15.89 0 0 57.96 16  
G28-29-S-3  
88.39 47812.4 1446.24 15.69 0 0 53.28 16  
G28-29-S-4  
114.53 59918.5 2640.87 65.56 0 0 49.56 16  
G28-29-S-5  
88.39 47812.4 1446.24 15.69 0 0 53.28 16

88.39	47812.4	1446.24	15.69	0	0	53.28	16
G28-29-S-6							
90.73	57436.9	1446.29	15.89	0	0	57.96	16
G28-29-S-7							
93.01	67770.3	1446.33	16.08	0	0	62.52	16
G29-30-N-1							
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G29-30-N-2							
76.21	38268.4	934.23	9.87	0	0	52.92	16
G29-30-N-3							
74.47	32892.7	934.2	9.72	0	0	49.44	16
G29-30-N-4							
76.27	38462	934.23	9.87	0	0	53.04	16
G29-30-N-5							
79.69	50414.8	934.31	10.16	0	0	59.88	16
G29-30-S-1							
79.75	50640.9	934.31	10.16	0	0	60	16
G29-30-S-2							
76.27	38462	934.23	9.87	0	0	53.04	16
G29-30-S-3							
73.75	30800.8	934.18	9.66	0	0	48	16
G29-30-S-4							
76.39	38850.7	934.24	9.88	0	0	53.28	16
G29-30-S-5							
79.87	51094.8	934.31	10.17	0	0	60.24	16
G30-31-1							
81.13	56000.7	934.34	10.28	0	0	62.76	16
G30-31-2							
78.37	45584.9	934.28	10.05	0	0	57.24	16
G30-31-3							
75.91	37309	934.23	9.84	0	0	52.32	16
G30-31-4							
90.89	44873.6	1616.87	19.09	0	0	50.28	16
G30-31-5							
142.35	79108.7	3835.53	201.32	0	0	49.2	16
G30-31-6							
90.89	44873.6	1616.87	19.09	0	0	50.28	16
G30-31-7							
75.91	37309	934.23	9.84	0	0	52.32	16
G30-31-8							
78.43	45798.5	934.28	10.05	0	0	57.36	16
G30-31-9							
81.19	56240.7	934.34	10.28	0	0	62.88	16
G31-32-N-1							
79.81	50867.6	934.31	10.17	0	0	60.12	16
G31-32-N-2							
76.39	38850.7	934.24	9.88	0	0	53.28	16
G31-32-N-3							
74.59	33248.9	934.2	9.73	0	0	49.68	16
G31-32-N-4							
77.29	41836.5	934.26	9.96	0	0	55.08	16
G31-32-N-5							
81.79	58672.9	934.35	10.33	0	0	64.08	16
G31-32-S-1							
79.87	51094.8	934.31	10.17	0	0	60.24	16
G31-32-S-2							
76.45	39045.9	934.24	9.89	0	0	53.4	16
G31-32-S-3							
74.77	33787.1	934.2	9.75	0	0	50.04	16
G31-32-S-4							
77.23	41633.6	934.25	9.95	0	0	54.96	16
G31-32-S-5							
81.85	58919.4	934.35	10.34	0	0	64.2	16
G32-33-N-1							
91.59	75827.5	1275.72	13.65	0	0	67.68	16
G32-33-N-2							
88.71	62317.9	1275.66	13.41	0	0	61.92	16
G32-33-N-3							
111.45	79678.5	2299.63	44.8031	0	0	59.4	16
G32-33-N-4							
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G32-33-N-5							
149.11	101749	4006.25	230.44	0	0	54.72	16
G32-33-N-6							
109.83	70751.4	2299.6	44.67	0	0	56.16	16
G32-33-N-7							
87.69	57888.6	1275.64	13.32	0	0	59.88	16
G32-33-N-8							
89.49	65829.5	1275.68	13.47	0	0	63.48	16

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G32-33-N-9  
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G32-33-S-1  
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G32-33-S-2  
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G32-33-S-3  
83.03 51527.7 1104.96 11.37 0 0 58.56 16  
G32-33-S-4  
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G32-33-S-5  
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G32-33-S-6  
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G33-34-N-2  
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G33-34-N-3  
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G33-34-N-5  
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G33-34-S-4  
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G34-35-N-3  
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G34-35-N-4  
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G34-35-S-6  
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G35-36-N-2  
139.73 146208 2821.19 91.06 0 0 73.56 16  
G35-36-N-3  
126.45 122139 2309.15 48.15 0 0 71.52 16  
G35-36-N-4  
100.05 79056.8 1285.07 16.34 0 0 67.68 16  
G35-36-N-5  
121.95 97127.7 2309 47.56 0 0 64.32 16  
G35-36-N-6  
141.13 115084 3162.31 113.81 0 0 63 16

141.13 115084 3162.31 113.81 0 0 63 16  
G35-36-N-7  
160.23 131699 4015.61 233.17 0 0 61.56 16  
G35-36-N-8  
175.7 145837 4698.26 377.44 0 0 60.72 16  
G35-36-N-9  
161.13 138119 4015.64 233.29 0 0 63 16  
G35-36-N-10  
142.4 123060 3162.35 113.98 0 0 65.04 16  
G35-36-N-11  
122.63 100675 2309.02 47.65 0 0 65.4 16  
G35-36-N-12  
100.35 80319.8 1285.08 16.375 0 0 68.16 16  
G35-36-N-13  
126.3 121253 2309.14 48.13 0 0 71.28 16  
G35-36-N-14  
151.58 164539 3333.18 133.79 0 0 73.32 16  
G35-36-N-15  
177.3 217594 4357.24 300.52 0 0 76.08 16  
G35-36-S-1  
177.6 220448 4357.25 300.56 0 0 76.56 16  
G35-36-S-2  
151.95 167396 3333.19 133.84 0 0 73.92 16  
G35-36-S-3  
126.38 121696 126.38 48.14 0 0 71.4 16  
G35-36-S-4  
100.35 86319.8 1285.08 16.375 0 0 68.16 16  
G35-36-S-5  
123 102677 2309.03 47.7 0 0 66 16  
G35-36-S-6  
141.73 118800 3162.33 113.89 0 0 63.96 16  
G35-36-S-7  
164.38 137304 4186.28 264.84 0 0 61.8 16  
G35-36-S-8  
179.7 150373 4868.93 421.33 0 0 60.72 16  
G35-36-S-9  
164.23 136213 4186.28 264.82 0 0 61.56 16  
G35-36-S-10  
141.13 115084 3162.31 113.81 0 0 63 16  
G35-36-S-11  
121.95 97127.7 2309 47.56 0 0 64.32 16  
G35-36-S-12  
99.98 78742.9 1285.06 16.33 0 0 67.56 16  
G35-36-S-13  
126.3 121253 2309.14 48.13 0 0 71.28 16  
G35-36-S-14  
151.73 165679 3333.19 133.81 0 0 73.56 16  
G35-36-S-15  
177.38 218306 4357.24 300.53 0 0 76.2 16  
G36-37-N-1  
151.35 162839 3333.17 133.77 0 0 72.96 16  
G36-37-N-2  
123.45 105108 2309.05 47.76 0 0 66.72 16  
G36-37-N-3  
96.23 63953 1284.94 15.84 0 0 61.56 16  
G36-37-S-1  
151.95 167396 3333.19 133.84 0 0 73.92 16  
G36-37-S-2  
125.18 114725 2309.1 47.9824 0 0 69.48 16  
G36-37-S-3  
98.4 72315.9 1285.01 16.12 0 0 65.04 16  
G36-34-S-4  
95.78 62295.9 1284.93 15.78 0 0 60.84 16  
F1-1  
27.77 7824.89 64.18 2.99 0 0 43.56 8  
F2-1-1  
29.8 10318.2 64.21 3.08 0 0 48.97 8  
F2-1-2  
30.2 10858.5 64.21 3.1 0 0 50.03 8  
F1-2-1  
27.68 7719.64 64.18 2.99 0 0 43.31 8  
F1-2-2  
27.48 7498.85 64.18 2.98 0 0 42.78 8  
F2-2-1  
30.2 10858.5 64.21 3.1 0 0 50.03 8  
F2-2-2  
29.82 10349.5 64.21 3.0855 0 0 49.03 8  
F1-3  
27.18 7168.66 64.182.96 0 0 41.97 8

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27.18 7168.66 64.18 2.96 0 0 41.97 8
F2-3
28.83 9069.48 64.2 3.04 0 0 46.375 8
F1-4
26.82 6798.81 64.17 2.9449 0 0 41.03 8
F2-4
28.51 8684.32 64.19 3.024 0 0 45.53 8
F1A-5
26.09 6060.31 64.17 2.9103 0 0 39.0625 8
F1B-5
27.04 7019.29 64.18 2.9548 0 0 41.5938 8
F2A-5
29.27 9628.96 64.2 3.06 0 0 47.5625 8
F2B-5
28.72 8939.96 64.2 3.0339 0 0 46.0938 8
F1-6
23.93 4187.62 64.14 2.81 0 0 33.3125 8
F2-6
28.03 8118.82 64.19 3 0 0 44.25 8
F1-7
27.44 4856.98 85.47 5.87 0 0 32.5 8
F2-7
27.02 7006.93 64.18 2.95 0 0 41.56 8
F1A-8
27.06 4524.6 85.46 5.8519 0 0 31.5 8
F1B-8
26.69 4205.74 85.46 5.8343 0 0 30.5 8
F1C-8
26.31 3900.24 85.45 5.8167 0 0 29.5 8
F2A-8
26.44 6405.58 64.17 2.93 0 0 40 8
F2B-8
26.06 6037.7 64.16 2.91 0 0 39 8
F2C-8
25.7 5693.74 64.16 2.89 0 0 38.03 8
F1A-9
25.94 3607.88 85.45 5.8 0 0 28.5 8
F1BC-9
25 2933.33 85.44 5.7552 0 0 26 8
F2A-9
25.32 5351.34 64.16 2.87 0 0 37.03 8
F2B-9
25.13 5174.59 64.15 2.8652 0 0 36.5 8
F2C-9
24.94 5011.49 64.15 2.86 0 0 36 8
F1-10
25.66 3397.14 85.45 5.786 0 0 27.75 8
F2-10
24.75 4851.5 64.15 2.8477 0 0 35.5 8
F1-11
29.57 4108.86 106.78 10.87 0 0 28.03 8
F2-11
24.75 4851.5 64.15 2.85 0 0 35.5 8
F1A-12
29.77 4285.69 106.78 10.8748 0 0 28.5625 8
F1B-12
30.04 4531.62 106.78 10.8874 0 0 29.2813 8
F2A-12
24.75 4851.5 64.15 2.8477 0 0 35.5 8
F2B-12
24.76 4861.41 64.15 2.8482 0 0 35.5313 8
F1-13
30.31 4785.32 106.79 10.9 0 0 30 8
F2-13
24.57 4704.32 64.15 2.84 0 0 35.0313 8
F1-14
34.31 5700.4 128.12 18.4834 0 0 30.5 8
F2-14
25.32 5351.34 64.16 2.8746 0 0 37.0313 8
F1A-15
34.88 6348.16 128.13 18.51 0 0 32 8
F1B-15
35.44 7035.14 128.13 18.54 0 0 33.5 8
F1C-15
36 7762 128.14 18.56 0 0 35 8
F2A-15
25.89 5869.75 64.16 2.9 0 0 38.5313 8
F2B-15
26.43 6393.89 64.17 2.93 0 0 39.9688 8

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26.43 6393.89 64.17 2.93 0 0 39.9688 8
F2C-15
26.99 6969.93 64.18 2.9526 0 0 41.4688 8
F1-16
36.97 9114.78 128.15 18.61 0 0 37.5938 8
F2-16
28.55 8726.61 64.19 3.0256 0 0 45.625 8
F1-17
33.83 8837.1 106.83 11.0649 0 0 39.375 8
F2-17
29.44 9840.27 64.2 3.0674 0 0 48 8
F1A-18
35.94 11971.8 106.85 11.1637 0 0 45 8
F1B-18
37.44 14544.9 106.87 11.234 0 0 49 8
F2A-18
28.78 9011.77 64.2 3.04 0 0 46.25 8
F2B-18
28.88 9127.41 64.2 3.04 0 0 46.5 8
F1-19
38.19 15943 106.88 11.27 0 0 51 8
F2-19
27.12 7106.19 64.18 2.96 0 0 41.8125 8
F1-20
30.55 11349.4 64.22 3.12 0 0 50.9688 8
F2-20
26.05 6026.41 64.16 2.91 0 0 38.9688 8
F1-21
30.75 11633.5 64.22 3.1289 0 0 51.5 8
F2-21
25.7 5693.74 64.16 2.8922 0 0 38.0313 8
F1-22
30.46 11085.9 64.22 3.11 0 0 50.4688 8
F2-22
23.64 3964.49 64.14 2.8 0 0 32.5313 8
FH1-1-1
30.15 10352.4 74.08 3.18 0 0 48.4063 8
FH1-1-2
29.41 9386.36 74.07 3.1454 0 0 46.4375 8
FH1-1-3
28.04 7742.32 74.05 3.0811 0 0 42.78 8
FH2-1-1
23.79 3793.54 74 2.8817 0 0 31.4375 8
FH2-23
24.38 4240.41 74.01 2.91 0 0 33 8
FH1-2-1
27.36 7370.79 64.18 2.97 0 0 42.4688 8
FH1-2-2
26.85 6823.1 64.17 2.946 0 0 41.0938 8
FH1-2-3
26.33 6300.79 64.17 2.9218 0 0 39.7188 8
FH2-2
23.81 4097.5 64.14 2.8037 0 0 33 8
FH1-3-1
25.9 5880.86 64.16 2.9015 0 0 38.5625 8
FH1-3-2
25.56 5563.84 64.16 2.8856 0 0 37.6563 8
FH2-3
23.81 4097.5 64.14 2.8037 0 0 33 8
FH1-4
25.38 5404 64.16 2.8773 0 0 37.1875 8
FH2-4
23.81 4097.5 64.14 2.8037 0 0 33 8
END

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UNIT FEET KIP
SUPPORTS
433 457 846 847 852 853 858 859 864 865 876 TO 879 1312 1335 PINNED
834 TO 845 848 TO 851 854 TO 857 860 TO 863 866 TO 875 FIXED
MEMBER RELEASE

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* release of diaphragms
* release of fascia stringers
* release of interior stringers
1 TO 16 19 21 23 25 29 TO 39 41 43 53 TO 68 70 71 73 75 78 80 82 83 -
85 TO 91 100 107 109 110 119 TO 133 141 TO 148 151 157 161 163 170 TO 178 -
185 TO 205 207 TO 259 261 263 265 267 274 280 286 291 297 301 307 312 316 -
318 320 322 323 325 327 329 330 332 334 335 337 339 341 343 345 347 349 350 -
352 354 356 358 360 362 364 366 368 370 372 374 375 377 379 380 382 384 386 -
388 390 392 394 411 TO 414 434 TO 441 463 465 468 471 473 TO 478 484 487 -
490 527 528 530 531 533 536 539 542 545 549 551 553 555 557 560 562 564 566 -

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490 527 528 530 531 533 536 539 542 545 549 551 553 555 557 560 562 564 566 -
568 571 573 575 577 579 582 584 586 588 590 593 595 597 599 601 604 606 608 -
610 612 615 617 619 621 623 627 630 633 636 639 725 TO 731 809 811 812 814 -
815 817 818 820 821 823 824 826 827 829 831 832 834 836 838 840 842 844 846 -
849 851 854 856 859 861 864 866 869 871 873 875 877 881 882 886 887 891 892 -
896 897 901 903 907 908 912 915 918 921 924 927 930 931 1068 to 1076 1078 -
1082 1086 1088 to 1095 1098 1102 1106 1108 1109 1110 1112 1115 1118 1122 1126 -
1128 1129 1130 1132 1135 1138 1142 1146 1148 to 1156 1158 1162 1166 1168 -
to 1178 1182 1186 1188 to 1198 1200 1201 1202 1204 1208 1210 -
1213 1216 1220 1224 1226 1230 1232 1235 1238 1242 1246 1248 1306 TO 1386 -
1451 1455 START MY MZ
* release of diaphragms
* release of fascia stringers
* release of interior stringers
16 19 21 23 25 27 28 39 41 43 46 TO 52 70 71 73 75 78 80 82 83 85 TO 91 93 -
94 TO 100 107 109 110 112 TO 126 134 TO 137 139 140 148 TO 151 157 161 163 -
185 TO 205 207 TO 258 260 262 264 266 268 TO 270 315 317 319 321 324 326 -
328 329 331 333 334 336 338 340 342 344 346 348 351 353 355 357 359 361 363 -
365 367 369 371 373 374 376 378 379 381 383 385 387 389 391 393 397 400 403 -
411 TO 414 422 425 431 434 TO 442 464 466 467 469 470 472 TO 478 482 483 -
485 486 488 489 548 554 559 565 570 576 581 587 592 598 603 609 614 620 625 -
626 628 629 631 632 634 635 637 638 640 TO 643 830 833 835 837 839 841 843 -
848 853 858 863 868 872 880 885 890 895 900 902 906 911 913 914 916 917 919 -
920 922 923 925 926 928 929 1079 1083 1087 1096 1099 1103 1107 1111 1113 -
1116 1119 1123 1127 1131 1133 1136 1139 1143 1147 1159 1163 1167 1179 1183 -
1187 1199 1205 1206 1209 1211 1214 1217 1221 1225 1227 1228 1231 1233 1236 -
1239 1243 1247 1249 1306 TO 1386 1435 1437 1441 1445 1448 1452 1456 1478 -
1481 1482 1485 TO 1487 1490 1492 1541 1549 to 1554 1562 to 1568 1583 to 1596 -
1604 TO 1610 1625 to 1641 1643 1645 1646 1647 1649 1651 1653 1655 TO 1673 -
1675 1677 1679 1681 1683 1685 1687 to 1700 1739 1741 1792 1794 1858 1862 1932 -
1934 1935 1937 1943 to 1947 1949 1950 END MY MZ

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DEFINE MATERIAL START

ISOTROPIC STEEL

E 4.176e+006

POISSON 0.3

DENSITY 0.489024

ALPHA 6e-006

DAMP 0.03

\*TYPE STEEL

\*STRENGTH FY 5184 FU 8352 RY 1.5 RT 1.2

END DEFINE MATERIAL

MEMBER PROPERTY AMERICAN

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1 TO 11 29 TO 31 67 93 TO 95 397 TO 405 417 418 421 TO 427 431 TO 433 442 -
443 TO 445 448 626 627 629 630 642 725 TO 727 1438 TO 1444 1477 TO 1480 1482 -
1485 TO 1487 1490 TABLE ST W21X73
32 TO 34 463 TO 466 482 TO 485 1435 TABLE ST W24X84
35 TO 38 142 143 149 467 TO 472 486 TO 490 830 TO 834 916 919 930 1481 -
1492 TABLE ST W24X94
46 TO 52 527 529 530 532 TO 547 1931 1933 TABLE ST W18X76
60 TO 63 625 628 631 634 TABLE ST W21X93
64 TO 66 112 TO 118 128 130 TO 133 170 TO 176 637 640 641 809 810 812 813 -
815 816 818 819 821 822 824 825 827 828 848 850 852 858 860 862 863 865 867 -
868 870 872 874 876 TO 880 882 TO 885 887 TO 890 892 TO 895 897 TO 900 903 -
904 TO 906 908 TO 911 1087 1107 1127 1147 1167 1187 1205 1539 1597 TO 1603 -
1613 1614 1617 TO 1624 TABLE ST W21X101
68 96 TO 99 632 633 635 636 638 639 643 728 TO 731 TABLE ST W21X83
53 TO 58 85 86 91 124 125 554 556 558 559 561 563 TO 565 567 569 576 578 580 -
587 589 591 598 600 602 609 611 613 1083 TO 1086 1103 TO 1106 1123 TO 1126 -
1143 TO 1146 1163 TO 1166 1183 TO 1186 1203 1204 1437 1542 1544 TO 1548 1555 -
1556 TO 1560 1571 1572 1938 TABLE ST W18X86
59 548 550 552 553 570 572 574 575 581 583 585 586 592 594 596 597 603 605 -
607 608 614 616 618 TO 620 622 624 1543 1561 1569 1570 1573 TO 1581 -
1582 TABLE ST W18X97
87 TO 90 TABLE ST W18X65
119 TO 121 TABLE ST W18X55
122 123 TABLE ST W18X71
134 TO 137 139 TO 141 144 TO 146 150 835 TO 842 881 886 891 896 901 902 907 -
912 TO 915 917 918 920 TO 922 925 928 931 TABLE ST W24X104
127 129 843 845 847 853 855 857 1611 1612 1615 1616 TABLE ST W21X111
147 923 924 926 927 929 TABLE ST W24X117
1079 TO 1082 1099 TO 1102 1119 TO 1122 1139 TO 1142 1159 TO 1162 1179 TO 1182 -
1199 1201 1436 1936 TABLE ST W16X77
1070 1072 1075 1078 1090 1092 1095 TO 1098 1110 TO 1118 1130 TO 1138 1150 -
1152 1155 1158 1170 1172 1175 1178 1190 1192 1195 1198 1641 TO 1644 1647 -
1648 TO 1654 1663 TO 1667 1673 TO 1686 1941 1942 1945 1946 1948 -
1950 TABLE ST W16X67
165 TO 169 179 TO 183 1023 TO 1067 1250 TO 1294 TABLE ST W36X170

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165 TO 169 179 TO 183 1023 TO 1067 1250 TO 1294 TABLE ST W36X170  
 18 45 72 74 76 77 79 81 84 101 160 162 518 TO 526 653 TO 715 732 TO 740 996 -  
 997 TO 1013 1459 TO 1467 TABLE ST W36X182  
 17 20 22 24 40 42 44 102 158 159 406 TO 410 419 420 428 TO 430 446 447 449 -  
 450 TO 456 481 491 TO 517 741 TO 749 978 TO 995 1430 1431 1468 TO 1476 1483 -  
 1484 1488 1489 TABLE ST W36X194  
 104 TO 106 111 153 154 156 759 TO 776 778 TO 785 800 TO 808 941 TO 958 969 -  
 970 TO 977 1540 TABLE ST W36X230

MEMBER PROPERTY AMERICAN  
 612 1541 UPTABLE 1 S1-8-C3  
 623 1549 UPTABLE 1 S2-8-C3  
 601 1550 UPTABLE 1 S3-8-C3  
 590 1551 UPTABLE 1 S4-8-C3  
 568 1552 UPTABLE 1 S5-8-C3  
 579 1553 UPTABLE 1 S6-8-C3  
 557 1554 UPTABLE 1 S7-8-C3  
 610 1567 UPTABLE 1 S1-8-C4  
 621 1568 UPTABLE 1 S2-8-C4  
 599 1566 UPTABLE 1 S3-8-C4  
 588 1565 UPTABLE 1 S4-8-C4  
 566 1563 UPTABLE 1 S5-8-C4  
 577 1564 UPTABLE 1 S6-8-C4  
 555 1562 UPTABLE 1 S7-8-C4  
 606 1595 UPTABLE 1 S1-9-C6  
 617 1596 UPTABLE 1 S2-9-C6  
 595 1594 UPTABLE 1 S3-9-C6  
 584 1593 UPTABLE 1 S4-9-C6  
 562 1591 UPTABLE 1 S5-9-C6  
 573 1592 UPTABLE 1 S6-9-C6  
 551 1590 UPTABLE 1 S7-9-C6  
 604 1588 UPTABLE 1 S1-9-C7  
 615 1589 UPTABLE 1 S2-9-C7  
 593 1587 UPTABLE 1 S3-9-C7  
 582 1586 UPTABLE 1 S4-9-C7  
 560 1584 UPTABLE 1 S5-9-C7  
 571 1585 UPTABLE 1 S6-9-C7  
 549 1583 UPTABLE 1 S7-9-C7  
 811 1604 UPTABLE 1 S1-12-D2  
 817 1606 UPTABLE 1 S2-12-D2  
 814 1605 UPTABLE 1 S3-12-D2  
 820 1607 UPTABLE 1 S4-12-D2  
 823 1608 UPTABLE 1 S5-12-D2  
 829 1610 UPTABLE 1 S6-12-D2  
 826 1609 UPTABLE 1 S7-12-D2  
 846 1625 UPTABLE 1 S1-15-E3  
 856 1627 UPTABLE 1 S2-15-E3  
 851 1626 UPTABLE 1 S3-15-E3  
 861 1628 UPTABLE 1 S4-15-E3  
 866 1629 UPTABLE 1 S5-15-E3  
 871 1631 UPTABLE 1 S6-15-E3  
 875 1630 UPTABLE 1 S7-15-E3  
 844 1632 UPTABLE 1 S1-15-E4  
 854 1634 UPTABLE 1 S2-15-E4  
 849 1633 UPTABLE 1 S3-15-E4  
 859 1635 UPTABLE 1 S4-15-E4  
 864 1636 UPTABLE 1 S5-15-E4  
 869 1637 UPTABLE 1 S6-15-E4  
 873 1638 UPTABLE 1 S7-15-E4  
 1177 1639 UPTABLE 1 SH6-1-H2  
 1197 1640 UPTABLE 1 SH7-1-H2  
 1176 1645 UPTABLE 1 SH6-1-H3  
 1196 1646 UPTABLE 1 SH7-1-H3  
 1154 1656 UPTABLE 1 SH4-2-H5  
 1074 1655 UPTABLE 1 SH5-2-H5  
 1174 1657 UPTABLE 1 SH6-2-H5  
 1194 1658 UPTABLE 1 SH7-2-H5  
 1153 1660 UPTABLE 1 SH4-2-H6  
 1073 1659 UPTABLE 1 SH5-2-H6  
 1173 1661 UPTABLE 1 SH6-2-H6  
 1193 1662 UPTABLE 1 SH7-2-H6  
 1091 1669 UPTABLE 1 SH3-3-H8  
 1151 1670 UPTABLE 1 SH4-3-H8  
 1071 1668 UPTABLE 1 SH5-3-H8  
 1171 1671 UPTABLE 1 SH6-3-H8  
 1191 1672 UPTABLE 1 SH7-3-H8  
 1129 1690 UPTABLE 1 SH1-4-H10  
 1109 1689 UPTABLE 1 SH2-4-H10  
 1089 1688 UPTABLE 1 SH3-4-H10  
 1149 1691 UPTABLE 1 SH4-4-H10

1149 1691 UPTABLE 1 SH4-4-H10  
 1069 1687 UPTABLE 1 SH5-4-H10  
 1189 1693 UPTABLE 1 SH7-4-H10  
 1128 1697 UPTABLE 1 SH1-4-H11  
 1108 1696 UPTABLE 1 SH2-4-H11  
 1088 1695 UPTABLE 1 SH3-4-H11  
 1148 1698 UPTABLE 1 SH4-4-H11  
 1068 1694 UPTABLE 1 SH5-4-H11  
 1168 1699 UPTABLE 1 SH6-4-H11  
 1188 1700 UPTABLE 1 SH7-4-H11  
 1169 1692 UPTABLE 1 SH6-4-H10  
 26 457 TO 462 1432 TO 1434 UPTABLE 1 FB-A6  
 69 644 TO 652 UPTABLE 1 FB-C1  
 92 716 TO 724 UPTABLE 1 FB-C9  
 103 750 TO 758 UPTABLE 1 FB-E1  
 152 932 TO 940 UPTABLE 1 FB-E6  
 155 959 960 962 TO 968 UPTABLE 1 FB-G1  
 164 184 1014 TO 1022 1295 TO 1302 1929 UPTABLE 1 FB-G6  
 MEMBER PROPERTY AMERICAN  
 1493 1494 UPTABLE 1 C14  
 1495 1496 UPTABLE 1 C15-U  
 1701 1702 UPTABLE 1 C15-D  
 1497 1498 UPTABLE 1 C16-U  
 1703 1704 UPTABLE 1 C16-D  
 1499 1500 UPTABLE 1 C17-U  
 1705 1706 UPTABLE 1 C17-D  
 1501 1502 UPTABLE 1 C18-U  
 1503 1504 UPTABLE 1 C19-U  
 1709 1710 UPTABLE 1 C19-D  
 1707 1708 UPTABLE 1 C18-D  
 1505 UPTABLE 1 C20-N  
 1506 UPTABLE 1 C20-S  
 1507 UPTABLE 1 C21-N  
 1508 UPTABLE 1 C21-S  
 1509 UPTABLE 1 C22-N  
 1510 UPTABLE 1 C22-S  
 1511 UPTABLE 1 C23-N  
 1512 UPTABLE 1 C23-S  
 1513 1514 UPTABLE 1 C24  
 1515 1516 UPTABLE 1 C25  
 1517 1518 UPTABLE 1 C26  
 1519 1520 UPTABLE 1 C27-U  
 1711 1712 UPTABLE 1 C27-D  
 1521 1522 UPTABLE 1 C28-U  
 1713 1714 UPTABLE 1 C28-D  
 1523 1524 UPTABLE 1 C29  
 1525 1526 UPTABLE 1 C30  
 1527 1528 UPTABLE 1 C31  
 1529 UPTABLE 1 C32-N-U  
 1715 UPTABLE 1 C32-N-D  
 1530 UPTABLE 1 C32-S  
 1531 UPTABLE 1 C33-N  
 1532 UPTABLE 1 C33-S  
 1533 UPTABLE 1 C34-N  
 1534 UPTABLE 1 C34-S  
 1535 1536 UPTABLE 1 C35  
 1537 1538 UPTABLE 1 C36  
 MEMBER PROPERTY AMERICAN  
 271 294 1717 1719 UPTABLE 1 G14-15-1  
 415 416 1716 1718 UPTABLE 1 G14-15-2  
 272 295 UPTABLE 1 G15-16  
 273 296 1722 1723 UPTABLE 1 G16-17-1  
 479 480 1720 1721 UPTABLE 1 G16-17-2  
 MEMBER PROPERTY AMERICAN  
 274 UPTABLE 1 G17-18-N-1  
 1724 UPTABLE 1 G17-18-N-2  
 1725 UPTABLE 1 G17-18-N-3  
 1726 UPTABLE 1 G17-18-N-4  
 297 UPTABLE 1 G17-18-S-1  
 1727 UPTABLE 1 G17-18-S-2  
 1728 UPTABLE 1 G17-18-S-3  
 1729 UPTABLE 1 G17-18-S-4  
 275 298 UPTABLE 1 G18-19-1  
 1387 1408 1730 1731 UPTABLE 1 G18-19-2  
 1732 1733 UPTABLE 1 G18-19-3  
 1734 1735 UPTABLE 1 G18-19-4  
 1736 1737 UPTABLE 1 G18-19-5  
 276 UPTABLE 1 G19-20-N-1  
 1738 UPTABLE 1 G19-20-N-2

1738 UPTABLE 1 G19-20-N-2  
 1739 UPTABLE 1 G19-20-N-3  
 299 UPTABLE 1 G19-20-S-1  
 1740 UPTABLE 1 G19-20-S-2  
 1741 UPTABLE 1 G19-20-S-3  
 277 UPTABLE 1 G20-21-N-1  
 1742 UPTABLE 1 G20-21-N-2  
 1389 1743 UPTABLE 1 G20-21-N-3  
 1388 1744 UPTABLE 1 G20-21-N-4  
 1745 UPTABLE 1 G20-21-N-5  
 1746 UPTABLE 1 G20-21-N-6  
 1747 UPTABLE 1 G20-21-N-7  
 300 UPTABLE 1 G20-21-S-1  
 1748 UPTABLE 1 G20-21-S-2  
 1410 1749 UPTABLE 1 G20-21-S-3  
 1409 1750 UPTABLE 1 G20-21-S-4  
 1751 UPTABLE 1 G20-21-S-5  
 1752 UPTABLE 1 G20-21-S-6  
 1753 UPTABLE 1 G20-21-S-7  
 278 UPTABLE 1 G21-22-N-1  
 1754 UPTABLE 1 G21-22-N-2  
 1755 UPTABLE 1 G21-22-N-3  
 1391 1756 UPTABLE 1 G21-22-N-4  
 1390 1757 UPTABLE 1 G21-22-N-5  
 1758 UPTABLE 1 G21-22-N-6  
 1759 UPTABLE 1 G21-22-N-7  
 1760 UPTABLE 1 G21-22-N-8  
 395 UPTABLE 1 G21-22-S-1  
 1761 UPTABLE 1 G21-22-S-2  
 1762 UPTABLE 1 G21-22-S-3  
 1427 1763 UPTABLE 1 G21-22-S-4  
 1764 UPTABLE 1 G21-22-S-5  
 1765 UPTABLE 1 G21-22-S-6  
 1766 UPTABLE 1 G21-22-S-7  
 279 UPTABLE 1 G22-23-N-1  
 1767 UPTABLE 1 G22-23-N-2  
 1392 1768 UPTABLE 1 G22-23-N-3  
 1769 UPTABLE 1 G22-23-N-4  
 1770 UPTABLE 1 G22-23-N-5  
 396 UPTABLE 1 G22-23-S-1  
 1771 UPTABLE 1 G22-23-S-2  
 1772 UPTABLE 1 G22-23-S-3  
 1429 1773 UPTABLE 1 G22-23-S-4  
 1428 1774 UPTABLE 1 G22-23-S-5  
 1775 UPTABLE 1 G22-23-S-6  
 1776 UPTABLE 1 G22-23-S-7  
 280 UPTABLE 1 G23-24-N-1  
 1777 UPTABLE 1 G23-24-N-2  
 1778 UPTABLE 1 G23-24-N-3  
 301 UPTABLE 1 G23-24-S-1  
 1779 UPTABLE 1 G23-24-S-2  
 281 UPTABLE 1 G24-25-N-1  
 1781 UPTABLE 1 G24-25-N-3  
 1393 1782 UPTABLE 1 G24-25-N-4  
 1783 UPTABLE 1 G24-25-N-5  
 1784 UPTABLE 1 G24-25-N-6  
 1785 UPTABLE 1 G24-25-N-7  
 302 UPTABLE 1 G24-25-S-1  
 1786 UPTABLE 1 G24-25-S-2  
 1787 UPTABLE 1 G24-25-S-3  
 1411 1788 UPTABLE 1 G24-25-S-4  
 1789 UPTABLE 1 G24-25-S-5  
 1790 UPTABLE 1 G24-25-S-6  
 1791 UPTABLE 1 G24-25-S-7  
 282 UPTABLE 1 G25-26-N-1  
 1792 UPTABLE 1 G25-26-N-2  
 303 UPTABLE 1 G25-26-S-1  
 1793 UPTABLE 1 G25-26-S-2  
 1794 UPTABLE 1 G25-26-S-3  
 283 UPTABLE 1 G26-27-N-1  
 1795 UPTABLE 1 G26-27-N-2  
 1796 UPTABLE 1 G26-27-N-3  
 1797 UPTABLE 1 G26-27-N-4  
 1394 1798 UPTABLE 1 G26-27-N-5  
 1799 UPTABLE 1 G26-27-N-6  
 1800 UPTABLE 1 G26-27-N-7  
 1801 UPTABLE 1 G26-27-N-8  
 1802 UPTABLE 1 G26-27-N-9  
 304 UPTABLE 1 G26-27-S-1

304 UPTABLE 1 G26-27-S-1  
 1803 UPTABLE 1 G26-27-S-2  
 1804 UPTABLE 1 G26-27-S-3  
 1412 1805 UPTABLE 1 G26-27-S-4  
 1806 UPTABLE 1 G26-27-S-5  
 1807 UPTABLE 1 G26-27-S-6  
 1808 UPTABLE 1 G26-27-S-7  
 MEMBER PROPERTY AMERICAN  
 285 UPTABLE 1 G28-29-N-1  
 1817 UPTABLE 1 G28-29-N-2  
 1818 UPTABLE 1 G28-29-N-3  
 1819 UPTABLE 1 G28-29-N-4  
 1395 1820 UPTABLE 1 G28-29-N-5  
 1821 UPTABLE 1 G28-29-N-6  
 1822 UPTABLE 1 G28-29-N-7  
 1823 UPTABLE 1 G28-29-N-8  
 1824 UPTABLE 1 G28-29-N-9  
 306 UPTABLE 1 G28-29-S-1  
 1825 UPTABLE 1 G28-29-S-2  
 1826 UPTABLE 1 G28-29-S-3  
 1413 1827 UPTABLE 1 G28-29-S-4  
 1828 UPTABLE 1 G28-29-S-5  
 1829 UPTABLE 1 G28-29-S-6  
 1830 UPTABLE 1 G28-29-S-7  
 286 UPTABLE 1 G29-30-N-1  
 1831 UPTABLE 1 G29-30-N-2  
 1832 UPTABLE 1 G29-30-N-3  
 1833 UPTABLE 1 G29-30-N-4  
 1834 UPTABLE 1 G29-30-N-5  
 307 UPTABLE 1 G29-30-S-1  
 1835 UPTABLE 1 G29-30-S-2  
 1836 UPTABLE 1 G29-30-S-3  
 1837 UPTABLE 1 G29-30-S-4  
 1838 UPTABLE 1 G29-30-S-5  
 287 308 UPTABLE 1 G30-31-1  
 MEMBER PROPERTY AMERICAN  
 1839 1840 UPTABLE 1 G30-31-2  
 1841 1842 UPTABLE 1 G30-31-3  
 1843 1844 UPTABLE 1 G30-31-4  
 1396 1414 1845 1846 UPTABLE 1 G30-31-5  
 1847 1848 UPTABLE 1 G30-31-6  
 1849 1850 UPTABLE 1 G30-31-7  
 1851 1852 UPTABLE 1 G30-31-8  
 1853 1854 UPTABLE 1 G30-31-9  
 284 305 UPTABLE 1 G27-28-1  
 1809 1810 UPTABLE 1 G27-28-2  
 1811 1812 UPTABLE 1 G27-28-3  
 1813 1814 UPTABLE 1 G27-28-4  
 1815 1816 UPTABLE 1 G27-28-5  
 MEMBER PROPERTY AMERICAN  
 288 UPTABLE 1 G31-32-N-1  
 1855 UPTABLE 1 G31-32-N-2  
 1856 UPTABLE 1 G31-32-N-3  
 1857 UPTABLE 1 G31-32-N-4  
 1858 UPTABLE 1 G31-32-N-5  
 309 UPTABLE 1 G31-32-S-1  
 1859 UPTABLE 1 G31-32-S-2  
 1860 UPTABLE 1 G31-32-S-3  
 1861 UPTABLE 1 G31-32-S-4  
 1862 UPTABLE 1 G31-32-S-5  
 289 UPTABLE 1 G32-33-N-1  
 1863 UPTABLE 1 G32-33-N-2  
 1864 UPTABLE 1 G32-33-N-3  
 1398 1865 UPTABLE 1 G32-33-N-4  
 1866 UPTABLE 1 G32-33-N-5  
 1397 1867 UPTABLE 1 G32-33-N-6  
 1868 UPTABLE 1 G32-33-N-7  
 1869 UPTABLE 1 G32-33-N-8  
 1870 UPTABLE 1 G32-33-N-9  
 1416 UPTABLE 1 G32-33-S-1  
 1871 UPTABLE 1 G32-33-S-2  
 1872 UPTABLE 1 G32-33-S-3  
 1415 1873 UPTABLE 1 G32-33-S-4  
 1874 UPTABLE 1 G32-33-S-5  
 1875 UPTABLE 1 G32-33-S-6  
 1876 UPTABLE 1 G32-33-S-7  
 290 UPTABLE 1 G33-34-N-1  
 1877 UPTABLE 1 G33-34-N-2  
 1878 UPTABLE 1 G33-34-N-3

1878 UPTABLE 1 G33-34-N-3  
 1399 1879 UPTABLE 1 G33-34-N-4  
 1880 UPTABLE 1 G33-34-N-5  
 1881 UPTABLE 1 G33-34-N-6  
 311 UPTABLE 1 G33-34-S-1  
 1882 UPTABLE 1 G33-34-S-2  
 1883 UPTABLE 1 G33-34-S-3  
 1418 UPTABLE 1 G33-34-S-4  
 1417 1884 UPTABLE 1 G33-34-S-5  
 1885 UPTABLE 1 G33-34-S-6  
 1886 UPTABLE 1 G33-34-S-7  
 1887 UPTABLE 1 G33-34-S-8  
 291 UPTABLE 1 G34-35-N-1  
 1401 1888 UPTABLE 1 G34-35-N-2  
 1400 UPTABLE 1 G34-35-N-3  
 1889 UPTABLE 1 G34-35-N-4  
 1890 UPTABLE 1 G34-35-N-5  
 312 UPTABLE 1 G34-35-S-1  
 1891 UPTABLE 1 G34-35-S-2  
 1419 1892 UPTABLE 1 G34-35-S-3  
 1893 UPTABLE 1 G34-35-S-4  
 1894 UPTABLE 1 G34-35-S-5  
 1895 UPTABLE 1 G34-35-S-6  
 MEMBER PROPERTY AMERICAN  
 292 UPTABLE 1 G35-36-N-1  
 1896 UPTABLE 1 G35-36-N-2  
 1897 UPTABLE 1 G35-36-N-3  
 1406 1898 UPTABLE 1 G35-36-N-4  
 1899 UPTABLE 1 G35-36-N-5  
 1405 1900 UPTABLE 1 G35-36-N-6  
 1901 UPTABLE 1 G35-36-N-7  
 1404 1902 UPTABLE 1 G35-36-N-8  
 1403 1903 UPTABLE 1 G35-36-N-9  
 1904 UPTABLE 1 G35-36-N-10  
 1905 UPTABLE 1 G35-36-N-11  
 1402 1906 UPTABLE 1 G35-36-N-12  
 1907 UPTABLE 1 G35-36-N-13  
 1908 UPTABLE 1 G35-36-N-14  
 1909 UPTABLE 1 G35-36-N-15  
 313 UPTABLE 1 G35-36-S-1  
 1910 UPTABLE 1 G35-36-S-2  
 1911 UPTABLE 1 G35-36-S-3  
 1424 1912 UPTABLE 1 G35-36-S-4  
 1913 UPTABLE 1 G35-36-S-5  
 1914 UPTABLE 1 G35-36-S-6  
 1423 1915 UPTABLE 1 G35-36-S-7  
 1422 1916 UPTABLE 1 G35-36-S-8  
 1917 UPTABLE 1 G35-36-S-9  
 1421 1918 UPTABLE 1 G35-36-S-10  
 1919 UPTABLE 1 G35-36-S-11  
 1420 1920 UPTABLE 1 G35-36-S-12  
 1921 UPTABLE 1 G35-36-S-13  
 1922 UPTABLE 1 G35-36-S-14  
 1923 UPTABLE 1 G35-36-S-15  
 293 UPTABLE 1 G36-37-N-1  
 1924 UPTABLE 1 G36-37-N-2  
 1407 1925 UPTABLE 1 G36-37-N-3  
 314 UPTABLE 1 G36-37-S-1  
 1926 UPTABLE 1 G36-37-S-2  
 1426 1927 UPTABLE 1 G36-37-S-3  
 1425 1928 UPTABLE 1 G36-34-S-4  
 12 1445 TO 1447 UPTABLE 1 F1-1  
 13 1450 UPTABLE 1 F2-1-1  
 1448 1449 UPTABLE 1 F2-1-2  
 14 1454 UPTABLE 1 F1-2-1  
 1452 1453 UPTABLE 1 F1-2-2  
 15 1458 UPTABLE 1 F2-2-1  
 1456 1457 UPTABLE 1 F2-2-2  
 28 1451 UPTABLE 1 F1-3  
 27 1455 UPTABLE 1 F2-3  
 259 315 UPTABLE 1 F1-4  
 350 351 UPTABLE 1 F2-4  
 316 317 UPTABLE 1 F1A-5  
 352 353 UPTABLE 1 F2A-5  
 MEMBER PROPERTY AMERICAN  
 318 319 UPTABLE 1 F1B-5  
 354 355 UPTABLE 1 F2B-5  
 320 321 UPTABLE 1 F1-6  
 356 357 UPTABLE 1 F2-6

356 357 UPTABLE 1 F2-6  
 260 322 UPTABLE 1 F1-7  
 358 359 UPTABLE 1 F2-7  
 261 262 UPTABLE 1 F1A-8  
 263 264 UPTABLE 1 F1B-8  
 265 266 UPTABLE 1 F1C-8  
 360 361 UPTABLE 1 F2A-8  
 362 363 UPTABLE 1 F2B-8  
 364 365 UPTABLE 1 F2C-8  
 267 268 UPTABLE 1 F1A-9  
 323 TO 326 UPTABLE 1 F1BC-9  
 366 367 UPTABLE 1 F2A-9  
 368 369 UPTABLE 1 F2B-9  
 370 371 UPTABLE 1 F2C-9  
 327 328 UPTABLE 1 F1-10  
 372 373 UPTABLE 1 F2-10  
 329 UPTABLE 1 F1-11  
 374 UPTABLE 1 F2-11  
 330 331 UPTABLE 1 F1A-12  
 332 333 UPTABLE 1 F1B-12  
 375 376 UPTABLE 1 F2A-12  
 377 378 UPTABLE 1 F2B-12  
 334 UPTABLE 1 F1-13  
 379 UPTABLE 1 F2-13  
 335 336 UPTABLE 1 F1-14  
 380 381 UPTABLE 1 F2-14  
 337 338 UPTABLE 1 F1A-15  
 339 340 UPTABLE 1 F1B-15  
 341 342 UPTABLE 1 F1C-15  
 382 383 UPTABLE 1 F2A-15  
 384 385 UPTABLE 1 F2B-15  
 386 387 UPTABLE 1 F2C-15  
 343 344 UPTABLE 1 F1-16  
 388 389 UPTABLE 1 F2-16  
 345 346 UPTABLE 1 F1-17  
 390 391 UPTABLE 1 F2-17  
 347 348 UPTABLE 1 F1A-18  
 269 349 UPTABLE 1 F1B-18  
 392 393 UPTABLE 1 F2A-18  
 270 394 UPTABLE 1 F2B-18  
 177 1227 UPTABLE 1 F1-19  
 178 1249 UPTABLE 1 F2-19  
 1225 1226 UPTABLE 1 F1-20  
 1247 1248 UPTABLE 1 F2-20  
 1221 TO 1224 UPTABLE 1 F1-21  
 1243 TO 1246 UPTABLE 1 F2-21  
 1217 TO 1220 UPTABLE 1 F1-22  
 1239 TO 1242 UPTABLE 1 F2-22  
 1216 UPTABLE 1 FH1-1-1  
 1215 UPTABLE 1 FH1-1-2  
 1214 UPTABLE 1 FH1-1-3  
 1238 UPTABLE 1 FH2-1-1  
 1236 1237 UPTABLE 1 FH2-23  
 1213 UPTABLE 1 FH1-2-1  
 1212 UPTABLE 1 FH1-2-2  
 1211 UPTABLE 1 FH1-2-3  
 1233 TO 1235 UPTABLE 1 FH2-2  
 1210 UPTABLE 1 FH1-3-1  
 1209 UPTABLE 1 FH1-3-2  
 1231 1232 UPTABLE 1 FH2-3  
 1206 TO 1208 UPTABLE 1 FH1-4  
 1228 TO 1230 UPTABLE 1 FH2-4  
 MEMBER PROPERTY AMERICAN  
 16 19 21 23 25 39 41 43 70 71 73 75 78 80 82 83 100 107 109 110 126 148 151 -  
 157 185 TO 205 207 TO 217 222 TO 258 411 TO 414 434 TO 441 473 TO 478 1312 -  
 1313 TO 1386 TABLE ST C12X25  
 161 163 218 TO 221 1306 TO 1311 TABLE ST C10X30  
 MEMBER PROPERTY AMERICAN  
 1780 UPTABLE 1 G24-25-N-2  
 MEMBER PROPERTY AMERICAN  
 1930 UPTABLE 1 G22-23-S-8  
 MEMBER PROPERTY AMERICAN  
 1094 1947 UPTABLE 1 SH3-2-H5  
 1093 1949 UPTABLE 1 SH3-2-H6  
 1156 1944 UPTABLE 1 SH4-1-H3  
 1076 1943 UPTABLE 1 SH5-1-H3  
 1200 1935 UPTABLE 1 S7-22-G5  
 1202 1937 UPTABLE 1 S7-21-G3  
 528 1932 UPTABLE 1 S1-5-B2

528 1932 UPTABLE 1 S1-5-B2  
531 1934 UPTABLE 1 S2-5-B2  
CONSTANTS  
MATERIAL STEEL ALL  
SLAVE RIGID MASTER 1289 JOINT 409  
SLAVE RIGID MASTER 1337 JOINT 467  
SLAVE RIGID MASTER 1290 JOINT 410  
SLAVE RIGID MASTER 1291 JOINT 411  
SLAVE RIGID MASTER 1339 JOINT 486  
SLAVE RIGID MASTER 1292 JOINT 412  
SLAVE RIGID MASTER 1293 JOINT 413  
SLAVE RIGID MASTER 1342 JOINT 508  
SLAVE RIGID MASTER 1294 JOINT 414  
SLAVE RIGID MASTER 1295 JOINT 415  
SLAVE RIGID MASTER 1344 JOINT 511  
SLAVE RIGID MASTER 1346 JOINT 583  
SLAVE RIGID MASTER 1296 JOINT 416  
SLAVE RIGID MASTER 1351 JOINT 588  
SLAVE RIGID MASTER 1347 JOINT 584  
SLAVE RIGID MASTER 1297 JOINT 417  
SLAVE RIGID MASTER 1349 JOINT 586  
SLAVE RIGID MASTER 1298 JOINT 419  
SLAVE RIGID MASTER 1299 JOINT 420  
SLAVE RIGID MASTER 1354 JOINT 600  
SLAVE RIGID MASTER 1300 JOINT 421  
SLAVE RIGID MASTER 1301 JOINT 422  
SLAVE RIGID MASTER 1355 JOINT 623  
SLAVE RIGID MASTER 1302 JOINT 423  
SLAVE RIGID MASTER 1303 JOINT 424  
SLAVE RIGID MASTER 1358 JOINT 633  
SLAVE RIGID MASTER 1304 JOINT 425  
SLAVE RIGID MASTER 1305 JOINT 426  
SLAVE RIGID MASTER 1360 JOINT 688  
SLAVE RIGID MASTER 1306 JOINT 427  
SLAVE RIGID MASTER 1307 JOINT 428  
SLAVE RIGID MASTER 1362 JOINT 696  
SLAVE RIGID MASTER 1363 JOINT 704  
SLAVE RIGID MASTER 1308 JOINT 429  
SLAVE RIGID MASTER 1366 JOINT 721  
SLAVE RIGID MASTER 1309 JOINT 430  
SLAVE RIGID MASTER 1368 JOINT 737  
SLAVE RIGID MASTER 1369 JOINT 745  
SLAVE RIGID MASTER 1310 JOINT 431  
SLAVE RIGID MASTER 1372 JOINT 762  
SLAVE RIGID MASTER 1374 JOINT 771  
SLAVE RIGID MASTER 1376 JOINT 824  
SLAVE RIGID MASTER 1378 JOINT 826  
SLAVE RIGID MASTER 1379 JOINT 827  
SLAVE RIGID MASTER 1311 JOINT 432  
SLAVE RIGID MASTER 1382 JOINT 830  
SLAVE RIGID MASTER 1381 JOINT 829  
SLAVE RIGID MASTER 1380 JOINT 828  
SLAVE RIGID MASTER 1334 JOINT 456  
SLAVE RIGID MASTER 1377 JOINT 825  
SLAVE RIGID MASTER 1375 JOINT 823  
SLAVE RIGID MASTER 1373 JOINT 765  
SLAVE RIGID MASTER 1371 JOINT 756  
SLAVE RIGID MASTER 1370 JOINT 748  
SLAVE RIGID MASTER 1333 JOINT 455  
SLAVE RIGID MASTER 1367 JOINT 731  
SLAVE RIGID MASTER 1332 JOINT 454  
SLAVE RIGID MASTER 1365 JOINT 715  
SLAVE RIGID MASTER 1364 JOINT 707  
SLAVE RIGID MASTER 1331 JOINT 453  
SLAVE RIGID MASTER 1361 JOINT 690  
SLAVE RIGID MASTER 1330 JOINT 451  
SLAVE RIGID MASTER 1329 JOINT 450  
SLAVE RIGID MASTER 1359 JOINT 687  
SLAVE RIGID MASTER 1328 JOINT 449  
SLAVE RIGID MASTER 1327 JOINT 448  
SLAVE RIGID MASTER 1357 JOINT 632  
SLAVE RIGID MASTER 1326 JOINT 447  
SLAVE RIGID MASTER 1325 JOINT 446  
SLAVE RIGID MASTER 1356 JOINT 624  
SLAVE RIGID MASTER 1324 JOINT 445  
SLAVE RIGID MASTER 1323 JOINT 444  
SLAVE RIGID MASTER 1353 JOINT 594  
SLAVE RIGID MASTER 1322 JOINT 443  
SLAVE RIGID MASTER 1321 JOINT 442



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SLAVE RIGID MASTER 1321 JOINT 442
SLAVE RIGID MASTER 1348 JOINT 585
SLAVE RIGID MASTER 1352 JOINT 589
SLAVE RIGID MASTER 1336 JOINT 459
SLAVE RIGID MASTER 1350 JOINT 587
SLAVE RIGID MASTER 1320 JOINT 441
SLAVE RIGID MASTER 1345 JOINT 582
SLAVE RIGID MASTER 1343 JOINT 510
SLAVE RIGID MASTER 1319 JOINT 440
SLAVE RIGID MASTER 1318 JOINT 439
SLAVE RIGID MASTER 1341 JOINT 502
SLAVE RIGID MASTER 1317 JOINT 438
SLAVE RIGID MASTER 1316 JOINT 437
SLAVE RIGID MASTER 1340 JOINT 487
SLAVE RIGID MASTER 1315 JOINT 436
SLAVE RIGID MASTER 1314 JOINT 435
SLAVE RIGID MASTER 1338 JOINT 468
SLAVE RIGID MASTER 1313 JOINT 434
LOAD 1 LOADTYPE None TITLE DEAD LOADS
SELFWEIGHT Y -1.15 LIST 271 TO 309 311 TO 314 395 396 415 416 479 480 1387 -
1388 TO 1429 1493 TO 1538 1701 TO 1928 1930
SELFWEIGHT Y -1.05 LIST 1 TO 107 109 TO 137 139 TO 205 207 TO 270 315 TO 394 -
397 TO 414 417 TO 478 481 TO 776 778 TO 785 800 TO 960 962 TO 1076 -
1078 TO 1156 1158 TO 1302 1306 TO 1386 1430 TO 1490 1492 1539 TO 1700 1929 -
1931 TO 1938 1941 TO 1950
MEMBER LOAD
1 2 4 5 7 TO 10 30 31 33 TO 37 47 TO 51 54 TO 57 59 61 TO 65 86 88 TO 91 94 -
95 TO 98 113 TO 116 118 120 TO 124 128 TO 132 135 TO 137 139 142 TO 146 170 -
171 TO 172 174 175 397 TO 405 417 418 421 TO 427 431 TO 433 442 464 TO 472 -
483 TO 488 530 TO 544 559 TO 602 614 TO 624 626 TO 640 726 TO 730 -
812 TO 823 827 TO 829 832 TO 840 848 TO 871 882 TO 907 914 TO 928 -
1068 TO 1076 1078 TO 1127 1148 TO 1156 1158 TO 1187 1438 1441 TO 1443 1478 -
1479 TO 1480 1482 1492 1539 1543 TO 1547 1549 TO 1553 1556 TO 1559 1561 1563 -
1564 TO 1566 1568 1571 TO 1578 1581 1582 1584 TO 1587 1589 1591 TO 1594 1596 -
1598 TO 1601 1603 1605 TO 1608 1610 1613 TO 1622 1626 TO 1629 1631 -
1633 TO 1637 1639 1641 1642 1645 1647 TO 1652 1655 TO 1657 1659 TO 1661 1663 -
1664 TO 1666 1668 TO 1671 1673 TO 1678 1681 TO 1684 1687 TO 1689 1691 1692 -
1694 TO 1696 1698 1699 1933 1934 1941 TO 1950 UNI GY -0.722
12 14 28 177 259 TO 269 315 TO 349 1206 TO 1227 1445 TO 1447 1451 TO 1453 -
1454 UNI GY -0.959
13 15 27 178 270 350 TO 394 1228 TO 1249 1448 TO 1450 1455 TO 1457 -
1458 UNI GY -0.612
3 29 32 46 58 60 67 85 93 112 119 127 140 141 149 173 443 448 463 482 527 -
528 TO 529 603 TO 613 625 642 725 809 TO 811 830 831 843 TO 847 908 TO 913 -
930 1128 TO 1147 1435 1439 1477 1485 1490 1541 1542 1560 1567 1579 1580 1588 -
1595 1597 1604 1611 1612 1625 1632 1679 1680 1690 1697 1931 -
1932 UNI GY -0.718
6 11 38 52 53 66 68 87 99 117 125 133 134 147 150 176 444 445 489 490 545 -
546 TO 558 641 643 731 824 TO 826 841 842 872 TO 881 929 931 1188 TO 1205 -
1436 1437 1440 1444 1481 1486 1487 1548 1554 1555 1562 1569 1570 1583 1590 -
1602 1609 1623 1624 1630 1638 1640 1643 1644 1646 1653 1654 1658 1662 1667 -
1672 1685 1686 1693 1700 1935 TO 1938 UNI GY -0.752
PERFORM ANALYSIS
FINISH

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# STAAD MODEL INPUT

- EXAMPLE LL (MAXIMIZING GIRDERS AND COLUMNS)

SLAVE	RIGID	MASTER	1289	JOINT	409
SLAVE	RIGID	MASTER	1337	JOINT	467
SLAVE	RIGID	MASTER	1290	JOINT	410
SLAVE	RIGID	MASTER	1291	JOINT	411
SLAVE	RIGID	MASTER	1339	JOINT	486
SLAVE	RIGID	MASTER	1292	JOINT	412
SLAVE	RIGID	MASTER	1293	JOINT	413
SLAVE	RIGID	MASTER	1342	JOINT	508
SLAVE	RIGID	MASTER	1294	JOINT	414
SLAVE	RIGID	MASTER	1295	JOINT	415
SLAVE	RIGID	MASTER	1344	JOINT	511
SLAVE	RIGID	MASTER	1346	JOINT	583
SLAVE	RIGID	MASTER	1296	JOINT	416
SLAVE	RIGID	MASTER	1351	JOINT	588
SLAVE	RIGID	MASTER	1347	JOINT	584
SLAVE	RIGID	MASTER	1297	JOINT	417
SLAVE	RIGID	MASTER	1349	JOINT	586
SLAVE	RIGID	MASTER	1298	JOINT	419
SLAVE	RIGID	MASTER	1299	JOINT	420
SLAVE	RIGID	MASTER	1354	JOINT	600
SLAVE	RIGID	MASTER	1300	JOINT	421
SLAVE	RIGID	MASTER	1301	JOINT	422
SLAVE	RIGID	MASTER	1355	JOINT	623
SLAVE	RIGID	MASTER	1302	JOINT	423
SLAVE	RIGID	MASTER	1303	JOINT	424
SLAVE	RIGID	MASTER	1358	JOINT	633
SLAVE	RIGID	MASTER	1304	JOINT	425
SLAVE	RIGID	MASTER	1305	JOINT	426
SLAVE	RIGID	MASTER	1360	JOINT	688
SLAVE	RIGID	MASTER	1306	JOINT	427
SLAVE	RIGID	MASTER	1307	JOINT	428
SLAVE	RIGID	MASTER	1362	JOINT	696
SLAVE	RIGID	MASTER	1363	JOINT	704
SLAVE	RIGID	MASTER	1308	JOINT	429
SLAVE	RIGID	MASTER	1366	JOINT	721
SLAVE	RIGID	MASTER	1309	JOINT	430
SLAVE	RIGID	MASTER	1368	JOINT	737
SLAVE	RIGID	MASTER	1369	JOINT	745
SLAVE	RIGID	MASTER	1310	JOINT	431
SLAVE	RIGID	MASTER	1372	JOINT	762
SLAVE	RIGID	MASTER	1374	JOINT	771
SLAVE	RIGID	MASTER	1376	JOINT	824
SLAVE	RIGID	MASTER	1378	JOINT	826
SLAVE	RIGID	MASTER	1379	JOINT	827
SLAVE	RIGID	MASTER	1311	JOINT	432
SLAVE	RIGID	MASTER	1382	JOINT	830
SLAVE	RIGID	MASTER	1381	JOINT	829
SLAVE	RIGID	MASTER	1380	JOINT	828
SLAVE	RIGID	MASTER	1334	JOINT	456
SLAVE	RIGID	MASTER	1377	JOINT	825
SLAVE	RIGID	MASTER	1375	JOINT	823
SLAVE	RIGID	MASTER	1373	JOINT	765
SLAVE	RIGID	MASTER	1371	JOINT	756
SLAVE	RIGID	MASTER	1370	JOINT	748
SLAVE	RIGID	MASTER	1333	JOINT	455
SLAVE	RIGID	MASTER	1367	JOINT	731
SLAVE	RIGID	MASTER	1332	JOINT	454
SLAVE	RIGID	MASTER	1365	JOINT	715
SLAVE	RIGID	MASTER	1364	JOINT	707
SLAVE	RIGID	MASTER	1331	JOINT	453
SLAVE	RIGID	MASTER	1361	JOINT	690
SLAVE	RIGID	MASTER	1330	JOINT	451
SLAVE	RIGID	MASTER	1329	JOINT	450
SLAVE	RIGID	MASTER	1359	JOINT	687
SLAVE	RIGID	MASTER	1328	JOINT	449
SLAVE	RIGID	MASTER	1327	JOINT	448
SLAVE	RIGID	MASTER	1357	JOINT	632
SLAVE	RIGID	MASTER	1326	JOINT	447
SLAVE	RIGID	MASTER	1325	JOINT	446
SLAVE	RIGID	MASTER	1356	JOINT	624
SLAVE	RIGID	MASTER	1324	JOINT	445
SLAVE	RIGID	MASTER	1323	JOINT	444
SLAVE	RIGID	MASTER	1353	JOINT	594
SLAVE	RIGID	MASTER	1322	JOINT	443
SLAVE	RIGID	MASTER	1321	JOINT	442
SLAVE	RIGID	MASTER	1348	JOINT	585
SLAVE	RIGID	MASTER	1352	JOINT	589
SLAVE	RIGID	MASTER	1336	JOINT	459
SLAVE	RIGID	MASTER	1350	JOINT	587

SLAVE RIGID MASTER 1320 JOINT 441  
 SLAVE RIGID MASTER 1345 JOINT 582  
 SLAVE RIGID MASTER 1343 JOINT 510  
 SLAVE RIGID MASTER 1319 JOINT 440  
 SLAVE RIGID MASTER 1318 JOINT 439  
 SLAVE RIGID MASTER 1341 JOINT 502  
 SLAVE RIGID MASTER 1317 JOINT 438  
 SLAVE RIGID MASTER 1316 JOINT 437  
 SLAVE RIGID MASTER 1340 JOINT 487  
 SLAVE RIGID MASTER 1315 JOINT 436  
 SLAVE RIGID MASTER 1314 JOINT 435  
 SLAVE RIGID MASTER 1338 JOINT 468  
 SLAVE RIGID MASTER 1313 JOINT 434

DEFINE MOVING LOAD

TYPE 1 LOAD 3.6  
 DIST 0  
 TYPE 2 LOAD 14.4  
 DIST 0  
 TYPE 3 LOAD 14.4  
 DIST 0

LOAD GENERATION 55

TYPE 1 -1.011 0 664.41 XINC 3  
 TYPE 1 -1.011 0 670.41 XINC 3  
 TYPE 1 -1.011 0 674.41 XINC 3  
 TYPE 1 -1.011 0 680.41 XINC 3  
 TYPE 1 -1.011 0 686.41 XINC 3  
 TYPE 1 -1.011 0 692.41 XINC 3  
 TYPE 2 -15.011 0 664.41 XINC 3  
 TYPE 2 -15.011 0 670.41 XINC 3  
 TYPE 2 -15.011 0 674.41 XINC 3  
 TYPE 2 -15.011 0 680.41 XINC 3  
 TYPE 2 -15.011 0 686.41 XINC 3  
 TYPE 2 -15.011 0 692.41 XINC 3  
 TYPE 3 -29.011 0 664.41 XINC 3  
 TYPE 3 -29.011 0 670.41 XINC 3  
 TYPE 3 -29.011 0 674.41 XINC 3  
 TYPE 3 -29.011 0 680.41 XINC 3  
 TYPE 3 -29.011 0 686.41 XINC 3  
 TYPE 3 -29.011 0 692.41 XINC 3

LOAD GENERATION 190

TYPE 1 734.185 0 459.58 XINC 3 ZINC -2.323  
 TYPE 1 737.858 0 464.324 XINC 3 ZINC -2.323  
 TYPE 1 740.307 0 467.487 XINC 3 ZINC -2.323  
 TYPE 1 743.98 0 472.231 XINC 3 ZINC -2.323  
 TYPE 1 747.654 0 476.975 XINC 3 ZINC -2.323  
 TYPE 1 751.327 0 481.719 XINC 3 ZINC -2.323  
 TYPE 2 723.115 0 468.152 XINC 3 ZINC -2.323  
 TYPE 2 726.788 0 472.896 XINC 3 ZINC -2.323  
 TYPE 2 729.237 0 476.058 XINC 3 ZINC -2.323  
 TYPE 2 732.911 0 480.802 XINC 3 ZINC -2.323  
 TYPE 2 736.584 0 485.546 XINC 3 ZINC -2.323  
 TYPE 2 740.258 0 490.291 XINC 3 ZINC -2.323  
 TYPE 3 712.046 0 476.723 XINC 3 ZINC -2.323  
 TYPE 3 715.719 0 481.467 XINC 3 ZINC -2.323  
 TYPE 3 718.168 0 484.63 XINC 3 ZINC -2.323  
 TYPE 3 721.841 0 489.374 XINC 3 ZINC -2.323  
 TYPE 3 725.515 0 494.118 XINC 3 ZINC -2.323  
 TYPE 3 729.188 0 498.862 XINC 3 ZINC -2.323

LOAD GENERATION 1

TYPE 1 137.033 0 664.41 XINC 0.001  
 TYPE 1 137.033 0 670.41 XINC 0.001  
 TYPE 1 137.033 0 674.41 XINC 0.001  
 TYPE 1 137.033 0 680.41 XINC 0.001  
 TYPE 1 137.033 0 686.41 XINC 0.001  
 TYPE 1 137.033 0 692.41 XINC 0.001  
 TYPE 2 123.033 0 664.41 XINC 0.001  
 TYPE 2 123.033 0 670.41 XINC 0.001  
 TYPE 2 123.033 0 674.41 XINC 0.001  
 TYPE 2 123.033 0 680.41 XINC 0.001  
 TYPE 2 123.033 0 686.41 XINC 0.001  
 TYPE 2 123.033 0 692.41 XINC 0.001  
 TYPE 3 109.033 0 664.41 XINC 0.001  
 TYPE 3 109.033 0 670.41 XINC 0.001  
 TYPE 3 109.033 0 674.41 XINC 0.001  
 TYPE 3 109.033 0 680.41 XINC 0.001  
 TYPE 3 109.033 0 686.41 XINC 0.001  
 TYPE 3 109.033 0 692.41 XINC 0.001

LOAD GENERATION 1

TYPE 1 140.033 0 664.41 XINC 0.001

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TYPE 1 140.051 0 670.41 XINC 0.001
TYPE 1 140.064 0 674.41 XINC 0.001
TYPE 1 140.082 0 680.41 XINC 0.001
TYPE 1 140.101 0 686.41 XINC 0.001
TYPE 1 140.119 0 692.41 XINC 0.001
TYPE 2 126.033 0 664.41 XINC 0.001
TYPE 2 126.033 0 670.41 XINC 0.001
TYPE 2 126.033 0 674.41 XINC 0.001
TYPE 2 126.033 0 680.41 XINC 0.001
TYPE 2 126.033 0 686.41 XINC 0.001
TYPE 2 126.033 0 692.41 XINC 0.001
TYPE 3 112.033 0 664.41 XINC 0.001
TYPE 3 112.033 0 670.41 XINC 0.001
TYPE 3 112.033 0 674.41 XINC 0.001
TYPE 3 112.033 0 680.41 XINC 0.001
TYPE 3 112.033 0 686.41 XINC 0.001
TYPE 3 112.033 0 692.41 XINC 0.001
LOAD GENERATION 1
TYPE 1 143.033 0 664.391 XINC 0.001
TYPE 1 143.07 0 670.391 XINC 0.001
TYPE 1 143.095 0 674.391 XINC 0.001
TYPE 1 143.132 0 680.391 XINC 0.001
TYPE 1 143.169 0 686.391 XINC 0.001
TYPE 1 143.206 0 692.391 XINC 0.001
TYPE 2 129.033 0 664.41 XINC 0.001
TYPE 2 129.033 0 670.41 XINC 0.001
TYPE 2 129.033 0 674.41 XINC 0.001
TYPE 2 129.033 0 680.41 XINC 0.001
TYPE 2 129.033 0 686.41 XINC 0.001
TYPE 2 129.033 0 692.41 XINC 0.001
TYPE 3 115.033 0 664.41 XINC 0.001
TYPE 3 115.033 0 670.41 XINC 0.001
TYPE 3 115.033 0 674.41 XINC 0.001
TYPE 3 115.033 0 680.41 XINC 0.001
TYPE 3 115.033 0 686.41 XINC 0.001
TYPE 3 115.033 0 692.41 XINC 0.001
LOAD GENERATION 1
TYPE 1 146.033 0 664.368 XINC 0.001
TYPE 1 146.088 0 670.368 XINC 0.001
TYPE 1 146.125 0 674.368 XINC 0.001
TYPE 1 146.181 0 680.368 XINC 0.001
TYPE 1 146.236 0 686.367 XINC 0.001
TYPE 1 146.292 0 692.367 XINC 0.001
TYPE 2 132.033 0 664.41 XINC 0.001
TYPE 2 132.033 0 670.41 XINC 0.001
TYPE 2 132.033 0 674.41 XINC 0.001
TYPE 2 132.033 0 680.41 XINC 0.001
TYPE 2 132.033 0 686.41 XINC 0.001
TYPE 2 132.033 0 692.41 XINC 0.001
TYPE 3 118.033 0 664.41 XINC 0.001
TYPE 3 118.033 0 670.41 XINC 0.001
TYPE 3 118.033 0 674.41 XINC 0.001
TYPE 3 118.033 0 680.41 XINC 0.001
TYPE 3 118.033 0 686.41 XINC 0.001
TYPE 3 118.033 0 692.41 XINC 0.001
LOAD GENERATION 1
TYPE 1 149.033 0 664.336 XINC 0.001
TYPE 1 149.107 0 670.336 XINC 0.001
TYPE 1 149.156 0 674.335 XINC 0.001
TYPE 1 149.23 0 680.335 XINC 0.001
TYPE 1 149.304 0 686.334 XINC 0.001
TYPE 1 149.378 0 692.334 XINC 0.001
TYPE 2 135.033 0 664.41 XINC 0.001
TYPE 2 135.033 0 670.41 XINC 0.001
TYPE 2 135.033 0 674.41 XINC 0.001
TYPE 2 135.033 0 680.41 XINC 0.001
TYPE 2 135.033 0 686.41 XINC 0.001
TYPE 2 135.033 0 692.41 XINC 0.001
TYPE 3 121.033 0 664.41 XINC 0.001
TYPE 3 121.033 0 670.41 XINC 0.001
TYPE 3 121.033 0 674.41 XINC 0.001
TYPE 3 121.033 0 680.41 XINC 0.001
TYPE 3 121.033 0 686.41 XINC 0.001
TYPE 3 121.033 0 692.41 XINC 0.001
LOAD GENERATION 1
TYPE 1 152.032 0 664.294 XINC 0.001
TYPE 1 152.125 0 670.294 XINC 0.001
TYPE 1 152.187 0 674.293 XINC 0.001
TYPE 1 152.279 0 680.292 XINC 0.001

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TYPE 1 152.372 0 686.292 XINC 0.001
TYPE 1 152.464 0 692.291 XINC 0.001
TYPE 2 138.033 0 664.41 XINC 0.001
TYPE 2 138.033 0 670.41 XINC 0.001
TYPE 2 138.033 0 674.41 XINC 0.001
TYPE 2 138.033 0 680.41 XINC 0.001
TYPE 2 138.033 0 686.41 XINC 0.001
TYPE 2 138.033 0 692.41 XINC 0.001
TYPE 3 124.033 0 664.41 XINC 0.001
TYPE 3 124.033 0 670.41 XINC 0.001
TYPE 3 124.033 0 674.41 XINC 0.001
TYPE 3 124.033 0 680.41 XINC 0.001
TYPE 3 124.033 0 686.41 XINC 0.001
TYPE 3 124.033 0 692.41 XINC 0.001
LOAD GENERATION 1
TYPE 1 155.032 0 664.243 XINC 0.001
TYPE 1 155.143 0 670.242 XINC 0.001
TYPE 1 155.217 0 674.242 XINC 0.001
TYPE 1 155.328 0 680.241 XINC 0.001
TYPE 1 155.439 0 686.24 XINC 0.001
TYPE 1 155.55 0 692.239 XINC 0.001
TYPE 2 141.033 0 664.402 XINC 0.001
TYPE 2 141.144 0 670.401 XINC 0.001
TYPE 2 141.218 0 674.401 XINC 0.001
TYPE 2 141.329 0 680.401 XINC 0.001
TYPE 2 141.44 0 686.4 XINC 0.001
TYPE 2 141.551 0 692.4 XINC 0.001
TYPE 3 127.033 0 664.41 XINC 0.001
TYPE 3 127.033 0 670.41 XINC 0.001
TYPE 3 127.033 0 674.41 XINC 0.001
TYPE 3 127.033 0 680.41 XINC 0.001
TYPE 3 127.033 0 686.41 XINC 0.001
TYPE 3 127.033 0 692.41 XINC 0.001
LOAD GENERATION 1
TYPE 1 158.031 0 664.183 XINC 0.001
TYPE 1 158.161 0 670.182 XINC 0.001
TYPE 1 158.247 0 674.181 XINC 0.001
TYPE 1 158.377 0 680.18 XINC 0.001
TYPE 1 158.506 0 686.178 XINC 0.001
TYPE 1 158.636 0 692.177 XINC 0.001
TYPE 2 144.033 0 664.385 XINC 0.001
TYPE 2 144.162 0 670.384 XINC 0.001
TYPE 2 144.249 0 674.383 XINC 0.001
TYPE 2 144.378 0 680.383 XINC 0.001
TYPE 2 144.508 0 686.382 XINC 0.001
TYPE 2 144.637 0 692.381 XINC 0.001
TYPE 3 130.033 0 664.41 XINC 0.001
TYPE 3 130.033 0 670.41 XINC 0.001
TYPE 3 130.033 0 674.41 XINC 0.001
TYPE 3 130.033 0 680.41 XINC 0.001
TYPE 3 130.033 0 686.41 XINC 0.001
TYPE 3 130.033 0 692.41 XINC 0.001
LOAD GENERATION 1
TYPE 1 161.031 0 664.114 XINC 0.001
TYPE 1 161.179 0 670.112 XINC 0.001
TYPE 1 161.277 0 674.111 XINC 0.001
TYPE 1 161.425 0 680.109 XINC 0.001
TYPE 1 161.573 0 686.107 XINC 0.001
TYPE 1 161.721 0 692.105 XINC 0.001
TYPE 2 147.033 0 664.359 XINC 0.001
TYPE 2 147.181 0 670.357 XINC 0.001
TYPE 2 147.28 0 674.357 XINC 0.001
TYPE 2 147.428 0 680.355 XINC 0.001
TYPE 2 147.576 0 686.354 XINC 0.001
TYPE 2 147.724 0 692.353 XINC 0.001
TYPE 3 133.033 0 664.41 XINC 0.001
TYPE 3 133.033 0 670.41 XINC 0.001
TYPE 3 133.033 0 674.41 XINC 0.001
TYPE 3 133.033 0 680.41 XINC 0.001
TYPE 3 133.033 0 686.41 XINC 0.001
TYPE 3 133.033 0 692.41 XINC 0.001
LOAD GENERATION 1
TYPE 1 164.03 0 664.035 XINC 0.001
TYPE 1 164.196 0 670.033 XINC 0.001
TYPE 1 164.307 0 674.031 XINC 0.001
TYPE 1 164.474 0 680.029 XINC 0.001
TYPE 1 164.64 0 686.027 XINC 0.001
TYPE 1 164.807 0 692.025 XINC 0.001
TYPE 2 150.033 0 664.323 XINC 0.001

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TYPE 2 150.199 0 670.321 XINC 0.001
TYPE 2 150.31 0 674.32 XINC 0.001
TYPE 2 150.477 0 680.319 XINC 0.001
TYPE 2 150.643 0 686.317 XINC 0.001
TYPE 2 150.81 0 692.315 XINC 0.001
TYPE 3 136.033 0 664.41 XINC 0.001
TYPE 3 136.033 0 670.41 XINC 0.001
TYPE 3 136.033 0 674.41 XINC 0.001
TYPE 3 136.033 0 680.41 XINC 0.001
TYPE 3 136.033 0 686.41 XINC 0.001
TYPE 3 136.033 0 692.41 XINC 0.001
LOAD GENERATION 1
TYPE 1 167.028 0 663.948 XINC 0.001
TYPE 1 167.213 0 669.945 XINC 0.001
TYPE 1 167.337 0 673.943 XINC 0.001
TYPE 1 167.522 0 679.94 XINC 0.001
TYPE 1 167.707 0 685.937 XINC 0.001
TYPE 1 167.892 0 691.934 XINC 0.001
TYPE 2 153.032 0 664.278 XINC 0.001
TYPE 2 153.217 0 670.276 XINC 0.001
TYPE 2 153.341 0 674.275 XINC 0.001
TYPE 2 153.526 0 680.272 XINC 0.001
TYPE 2 153.711 0 686.27 XINC 0.001
TYPE 2 153.896 0 692.268 XINC 0.001
TYPE 3 139.033 0 664.41 XINC 0.001
TYPE 3 139.033 0 670.41 XINC 0.001
TYPE 3 139.033 0 674.41 XINC 0.001
TYPE 3 139.033 0 680.41 XINC 0.001
TYPE 3 139.033 0 686.41 XINC 0.001
TYPE 3 139.033 0 692.41 XINC 0.001
LOAD GENERATION 1
TYPE 1 170.027 0 663.85 XINC 0.001
TYPE 1 170.23 0 669.847 XINC 0.001
TYPE 1 170.366 0 673.845 XINC 0.001
TYPE 1 170.569 0 679.841 XINC 0.001
TYPE 1 170.773 0 685.838 XINC 0.001
TYPE 1 170.976 0 691.834 XINC 0.001
TYPE 2 156.032 0 664.224 XINC 0.001
TYPE 2 156.235 0 670.222 XINC 0.001
TYPE 2 156.371 0 674.22 XINC 0.001
TYPE 2 156.574 0 680.217 XINC 0.001
TYPE 2 156.778 0 686.214 XINC 0.001
TYPE 2 156.981 0 692.211 XINC 0.001
TYPE 3 142.033 0 664.397 XINC 0.001
TYPE 3 142.236 0 670.396 XINC 0.001
TYPE 3 142.372 0 674.396 XINC 0.001
TYPE 3 142.576 0 680.394 XINC 0.001
TYPE 3 142.779 0 686.393 XINC 0.001
TYPE 3 142.983 0 692.392 XINC 0.001
LOAD GENERATION 1
TYPE 1 173.025 0 663.744 XINC 0.001
TYPE 1 173.247 0 669.74 XINC 0.001
TYPE 1 173.395 0 673.737 XINC 0.001
TYPE 1 173.617 0 679.733 XINC 0.001
TYPE 1 173.839 0 685.729 XINC 0.001
TYPE 1 174.061 0 691.725 XINC 0.001
TYPE 2 159.031 0 664.161 XINC 0.001
TYPE 2 159.253 0 670.158 XINC 0.001
TYPE 2 159.401 0 674.155 XINC 0.001
TYPE 2 159.623 0 680.152 XINC 0.001
TYPE 2 159.845 0 686.148 XINC 0.001
TYPE 2 160.067 0 692.145 XINC 0.001
TYPE 3 145.033 0 664.377 XINC 0.001
TYPE 3 145.255 0 670.375 XINC 0.001
TYPE 3 145.403 0 674.374 XINC 0.001
TYPE 3 145.625 0 680.373 XINC 0.001
TYPE 3 145.847 0 686.371 XINC 0.001
TYPE 3 146.069 0 692.369 XINC 0.001
LOAD GENERATION 1
TYPE 1 176.023 0 663.628 XINC 0.001
TYPE 1 176.263 0 669.624 XINC 0.001
TYPE 1 176.423 0 673.62 XINC 0.001
TYPE 1 176.664 0 679.616 XINC 0.001
TYPE 1 176.904 0 685.611 XINC 0.001
TYPE 1 177.145 0 691.606 XINC 0.001
TYPE 2 162.03 0 664.089 XINC 0.001
TYPE 2 162.271 0 670.085 XINC 0.001
TYPE 2 162.431 0 674.082 XINC 0.001
TYPE 2 162.672 0 680.078 XINC 0.001

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TYPE 2 162.912 0 686.073 XINC 0.001
TYPE 2 163.152 0 692.069 XINC 0.001
TYPE 3 148.033 0 664.348 XINC 0.001
TYPE 3 148.273 0 670.345 XINC 0.001
TYPE 3 148.434 0 674.344 XINC 0.001
TYPE 3 148.674 0 680.341 XINC 0.001
TYPE 3 148.915 0 686.339 XINC 0.001
TYPE 3 149.155 0 692.337 XINC 0.001
LOAD GENERATION 1
TYPE 1 179.02 0 663.504 XINC 0.001
TYPE 1 179.279 0 669.498 XINC 0.001
TYPE 1 179.452 0 673.494 XINC 0.001
TYPE 1 179.71 0 679.489 XINC 0.001
TYPE 1 179.969 0 685.483 XINC 0.001
TYPE 1 180.228 0 691.477 XINC 0.001
TYPE 2 165.029 0 664.007 XINC 0.001
TYPE 2 165.288 0 670.002 XINC 0.001
TYPE 2 165.461 0 673.999 XINC 0.001
TYPE 2 165.72 0 679.994 XINC 0.001
TYPE 2 165.979 0 685.989 XINC 0.001
TYPE 2 166.238 0 691.984 XINC 0.001
TYPE 3 151.033 0 664.309 XINC 0.001
TYPE 3 151.292 0 670.306 XINC 0.001
TYPE 3 151.464 0 674.304 XINC 0.001
TYPE 3 151.723 0 680.301 XINC 0.001
TYPE 3 151.982 0 686.298 XINC 0.001
TYPE 3 152.241 0 692.294 XINC 0.001
LOAD GENERATION 1
TYPE 1 182.017 0 663.369 XINC 0.001
TYPE 1 182.294 0 669.363 XINC 0.001
TYPE 1 182.479 0 673.359 XINC 0.001
TYPE 1 182.757 0 679.352 XINC 0.001
TYPE 1 183.034 0 685.346 XINC 0.001
TYPE 1 183.312 0 691.34 XINC 0.001
TYPE 2 168.028 0 663.916 XINC 0.001
TYPE 2 168.305 0 669.91 XINC 0.001
TYPE 2 168.49 0 673.906 XINC 0.001
TYPE 2 168.768 0 679.901 XINC 0.001
TYPE 2 169.045 0 685.895 XINC 0.001
TYPE 2 169.323 0 691.889 XINC 0.001
TYPE 3 154.032 0 664.261 XINC 0.001
TYPE 3 154.31 0 670.257 XINC 0.001
TYPE 3 154.495 0 674.255 XINC 0.001
TYPE 3 154.772 0 680.251 XINC 0.001
TYPE 3 155.05 0 686.247 XINC 0.001
TYPE 3 155.327 0 692.243 XINC 0.001
LOAD GENERATION 1
TYPE 1 185.014 0 663.226 XINC 0.001
TYPE 1 185.309 0 669.219 XINC 0.001
TYPE 1 185.507 0 673.214 XINC 0.001
TYPE 1 185.803 0 679.207 XINC 0.001
TYPE 1 186.099 0 685.199 XINC 0.001
TYPE 1 186.394 0 691.192 XINC 0.001
TYPE 2 171.026 0 663.816 XINC 0.001
TYPE 2 171.322 0 669.809 XINC 0.001
TYPE 2 171.519 0 673.805 XINC 0.001
TYPE 2 171.815 0 679.798 XINC 0.001
TYPE 2 172.111 0 685.791 XINC 0.001
TYPE 2 172.407 0 691.785 XINC 0.001
TYPE 3 157.032 0 664.204 XINC 0.001
TYPE 3 157.328 0 670.2 XINC 0.001
TYPE 3 157.525 0 674.196 XINC 0.001
TYPE 3 157.821 0 680.191 XINC 0.001
TYPE 3 158.117 0 686.187 XINC 0.001
TYPE 3 158.413 0 692.182 XINC 0.001
LOAD GENERATION 1
TYPE 1 188.01 0 663.074 XINC 0.001
TYPE 1 188.324 0 669.065 XINC 0.001
TYPE 1 188.534 0 673.06 XINC 0.001
TYPE 1 188.848 0 679.052 XINC 0.001
TYPE 1 189.162 0 685.043 XINC 0.001
TYPE 1 189.477 0 691.035 XINC 0.001
TYPE 2 174.024 0 663.706 XINC 0.001
TYPE 2 174.339 0 669.699 XINC 0.001
TYPE 2 174.548 0 673.694 XINC 0.001
TYPE 2 174.863 0 679.686 XINC 0.001
TYPE 2 175.177 0 685.678 XINC 0.001
TYPE 2 175.491 0 691.671 XINC 0.001
TYPE 3 160.031 0 664.138 XINC 0.001

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TYPE 3 160.345 0 670.132 XINC 0.001
TYPE 3 160.555 0 674.128 XINC 0.001
TYPE 3 160.869 0 680.123 XINC 0.001
TYPE 3 161.184 0 686.117 XINC 0.001
TYPE 3 161.498 0 692.111 XINC 0.001
LOAD GENERATION 1
TYPE 1 191.005 0 662.912 XINC 0.001
TYPE 1 191.338 0 668.902 XINC 0.001
TYPE 1 191.56 0 672.896 XINC 0.001
TYPE 1 191.893 0 678.887 XINC 0.001
TYPE 1 192.226 0 684.878 XINC 0.001
TYPE 1 192.559 0 690.869 XINC 0.001
TYPE 2 177.022 0 663.588 XINC 0.001
TYPE 2 177.355 0 669.579 XINC 0.001
TYPE 2 177.577 0 673.573 XINC 0.001
TYPE 2 177.909 0 679.565 XINC 0.001
TYPE 2 178.242 0 685.556 XINC 0.001
TYPE 2 178.575 0 691.548 XINC 0.001
TYPE 3 163.03 0 664.063 XINC 0.001
TYPE 3 163.363 0 670.056 XINC 0.001
TYPE 3 163.585 0 674.051 XINC 0.001
TYPE 3 163.918 0 680.045 XINC 0.001
TYPE 3 164.251 0 686.038 XINC 0.001
TYPE 3 164.584 0 692.031 XINC 0.001
LOAD GENERATION 1
TYPE 1 194 0 662.741 XINC 0.001
TYPE 1 194.352 0 668.73 XINC 0.001
TYPE 1 194.586 0 672.724 XINC 0.001
TYPE 1 194.937 0 678.713 XINC 0.001
TYPE 1 195.289 0 684.703 XINC 0.001
TYPE 1 195.64 0 690.693 XINC 0.001
TYPE 2 180.019 0 663.46 XINC 0.001
TYPE 2 180.37 0 669.45 XINC 0.001
TYPE 2 180.605 0 673.444 XINC 0.001
TYPE 2 180.956 0 679.434 XINC 0.001
TYPE 2 181.307 0 685.424 XINC 0.001
TYPE 2 181.659 0 691.415 XINC 0.001
TYPE 3 166.029 0 663.978 XINC 0.001
TYPE 3 166.38 0 669.97 XINC 0.001
TYPE 3 166.614 0 673.965 XINC 0.001
TYPE 3 166.966 0 679.957 XINC 0.001
TYPE 3 167.317 0 685.949 XINC 0.001
TYPE 3 167.669 0 691.941 XINC 0.001
LOAD GENERATION 1
TYPE 1 196.995 0 662.56 XINC 0.001
TYPE 1 197.365 0 668.549 XINC 0.001
TYPE 1 197.611 0 672.541 XINC 0.001
TYPE 1 197.981 0 678.53 XINC 0.001
TYPE 1 198.351 0 684.519 XINC 0.001
TYPE 1 198.721 0 690.507 XINC 0.001
TYPE 2 183.016 0 663.323 XINC 0.001
TYPE 2 183.386 0 669.312 XINC 0.001
TYPE 2 183.632 0 673.305 XINC 0.001
TYPE 2 184.002 0 679.294 XINC 0.001
TYPE 2 184.372 0 685.283 XINC 0.001
TYPE 2 184.742 0 691.272 XINC 0.001
TYPE 3 169.027 0 663.884 XINC 0.001
TYPE 3 169.397 0 669.875 XINC 0.001
TYPE 3 169.644 0 673.869 XINC 0.001
TYPE 3 170.014 0 679.86 XINC 0.001
TYPE 3 170.384 0 685.851 XINC 0.001
TYPE 3 170.753 0 691.842 XINC 0.001
LOAD GENERATION 1
TYPE 1 199.989 0 662.371 XINC 0.001
TYPE 1 200.377 0 668.358 XINC 0.001
TYPE 1 200.636 0 672.35 XINC 0.001
TYPE 1 201.024 0 678.337 XINC 0.001
TYPE 1 201.413 0 684.325 XINC 0.001
TYPE 1 201.801 0 690.312 XINC 0.001
TYPE 2 186.012 0 663.176 XINC 0.001
TYPE 2 186.401 0 669.164 XINC 0.001
TYPE 2 186.659 0 673.156 XINC 0.001
TYPE 2 187.048 0 679.144 XINC 0.001
TYPE 2 187.436 0 685.132 XINC 0.001
TYPE 2 187.824 0 691.12 XINC 0.001
TYPE 3 172.025 0 663.78 XINC 0.001
TYPE 3 172.414 0 669.77 XINC 0.001
TYPE 3 172.673 0 673.764 XINC 0.001
TYPE 3 173.061 0 679.753 XINC 0.001

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TYPE 3 173.45 0 685.743 XINC 0.001
TYPE 3 173.838 0 691.733 XINC 0.001
LOAD GENERATION 1
TYPE 1 202.982 0 662.172 XINC 0.001
TYPE 1 203.389 0 668.158 XINC 0.001
TYPE 1 203.66 0 672.149 XINC 0.001
TYPE 1 204.067 0 678.135 XINC 0.001
TYPE 1 204.474 0 684.121 XINC 0.001
TYPE 1 204.88 0 690.108 XINC 0.001
TYPE 2 189.008 0 663.021 XINC 0.001
TYPE 2 189.415 0 669.007 XINC 0.001
TYPE 2 189.686 0 672.999 XINC 0.001
TYPE 2 190.093 0 678.985 XINC 0.001
TYPE 2 190.5 0 684.972 XINC 0.001
TYPE 2 190.907 0 690.959 XINC 0.001
TYPE 3 175.023 0 663.668 XINC 0.001
TYPE 3 175.43 0 669.657 XINC 0.001
TYPE 3 175.701 0 673.649 XINC 0.001
TYPE 3 176.108 0 679.638 XINC 0.001
TYPE 3 176.515 0 685.626 XINC 0.001
TYPE 3 176.922 0 691.615 XINC 0.001
LOAD GENERATION 1
TYPE 1 205.975 0 661.964 XINC 0.001
TYPE 1 206.4 0 667.949 XINC 0.001
TYPE 1 206.684 0 671.939 XINC 0.001
TYPE 1 207.109 0 677.924 XINC 0.001
TYPE 1 207.534 0 683.909 XINC 0.001
TYPE 1 207.959 0 689.894 XINC 0.001
TYPE 2 192.004 0 662.856 XINC 0.001
TYPE 2 192.429 0 668.841 XINC 0.001
TYPE 2 192.712 0 672.832 XINC 0.001
TYPE 2 193.138 0 678.817 XINC 0.001
TYPE 2 193.563 0 684.803 XINC 0.001
TYPE 2 193.988 0 690.788 XINC 0.001
TYPE 3 178.021 0 663.546 XINC 0.001
TYPE 3 178.446 0 669.534 XINC 0.001
TYPE 3 178.73 0 673.525 XINC 0.001
TYPE 3 179.155 0 679.512 XINC 0.001
TYPE 3 179.58 0 685.5 XINC 0.001
TYPE 3 180.006 0 691.487 XINC 0.001
LOAD GENERATION 1
TYPE 1 208.967 0 661.747 XINC 0.001
TYPE 1 209.411 0 667.73 XINC 0.001
TYPE 1 209.707 0 671.72 XINC 0.001
TYPE 1 210.15 0 677.703 XINC 0.001
TYPE 1 210.594 0 683.687 XINC 0.001
TYPE 1 211.038 0 689.67 XINC 0.001
TYPE 2 194.999 0 662.682 XINC 0.001
TYPE 2 195.442 0 668.666 XINC 0.001
TYPE 2 195.738 0 672.655 XINC 0.001
TYPE 2 196.182 0 678.639 XINC 0.001
TYPE 2 196.626 0 684.624 XINC 0.001
TYPE 2 197.069 0 690.608 XINC 0.001
TYPE 3 181.018 0 663.415 XINC 0.001
TYPE 3 181.462 0 669.401 XINC 0.001
TYPE 3 181.758 0 673.392 XINC 0.001
TYPE 3 182.201 0 679.378 XINC 0.001
TYPE 3 182.645 0 685.364 XINC 0.001
TYPE 3 183.089 0 691.35 XINC 0.001
LOAD GENERATION 1
TYPE 1 211.959 0 661.52 XINC 0.001
TYPE 1 212.421 0 667.503 XINC 0.001
TYPE 1 212.729 0 671.491 XINC 0.001
TYPE 1 213.191 0 677.473 XINC 0.001
TYPE 1 213.653 0 683.455 XINC 0.001
TYPE 1 214.115 0 689.437 XINC 0.001
TYPE 2 197.993 0 662.498 XINC 0.001
TYPE 2 198.455 0 668.481 XINC 0.001
TYPE 2 198.763 0 672.47 XINC 0.001
TYPE 2 199.225 0 678.452 XINC 0.001
TYPE 2 199.688 0 684.435 XINC 0.001
TYPE 2 200.15 0 690.418 XINC 0.001
TYPE 3 184.015 0 663.275 XINC 0.001
TYPE 3 184.477 0 669.26 XINC 0.001
TYPE 3 184.785 0 673.249 XINC 0.001
TYPE 3 185.247 0 679.234 XINC 0.001
TYPE 3 185.71 0 685.218 XINC 0.001
TYPE 3 186.172 0 691.203 XINC 0.001
LOAD GENERATION 1

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TYPE 1 214.949 0 661.285 XINC 0.001
TYPE 1 215.43 0 667.266 XINC 0.001
TYPE 1 215.75 0 671.253 XINC 0.001
TYPE 1 216.231 0 677.233 XINC 0.001
TYPE 1 216.711 0 683.214 XINC 0.001
TYPE 1 217.192 0 689.195 XINC 0.001
TYPE 2 200.987 0 662.306 XINC 0.001
TYPE 2 201.467 0 668.287 XINC 0.001
TYPE 2 201.788 0 672.275 XINC 0.001
TYPE 2 202.268 0 678.256 XINC 0.001
TYPE 2 202.749 0 684.237 XINC 0.001
TYPE 2 203.23 0 690.219 XINC 0.001
TYPE 3 187.011 0 663.125 XINC 0.001
TYPE 3 187.492 0 669.109 XINC 0.001
TYPE 3 187.812 0 673.097 XINC 0.001
TYPE 3 188.293 0 679.08 XINC 0.001
TYPE 3 188.774 0 685.064 XINC 0.001
TYPE 3 189.254 0 691.047 XINC 0.001
LOAD GENERATION 1
TYPE 1 217.939 0 661.04 XINC 0.001
TYPE 1 218.438 0 667.019 XINC 0.001
TYPE 1 218.771 0 671.005 XINC 0.001
TYPE 1 219.27 0 676.984 XINC 0.001
TYPE 1 219.769 0 682.964 XINC 0.001
TYPE 1 220.268 0 688.943 XINC 0.001
TYPE 2 203.98 0 662.104 XINC 0.001
TYPE 2 204.479 0 668.084 XINC 0.001
TYPE 2 204.812 0 672.07 XINC 0.001
TYPE 2 205.311 0 678.05 XINC 0.001
TYPE 2 205.81 0 684.03 XINC 0.001
TYPE 2 206.309 0 690.01 XINC 0.001
TYPE 3 190.007 0 662.967 XINC 0.001
TYPE 3 190.506 0 668.948 XINC 0.001
TYPE 3 190.839 0 672.936 XINC 0.001
TYPE 3 191.338 0 678.918 XINC 0.001
TYPE 3 191.837 0 684.899 XINC 0.001
TYPE 3 192.336 0 690.881 XINC 0.001
LOAD GENERATION 1
TYPE 1 220.929 0 660.786 XINC 0.001
TYPE 1 221.446 0 666.764 XINC 0.001
TYPE 1 221.791 0 670.749 XINC 0.001
TYPE 1 222.308 0 676.726 XINC 0.001
TYPE 1 222.826 0 682.704 XINC 0.001
TYPE 1 223.343 0 688.681 XINC 0.001
TYPE 2 206.973 0 661.893 XINC 0.001
TYPE 2 207.49 0 667.871 XINC 0.001
TYPE 2 207.835 0 671.857 XINC 0.001
TYPE 2 208.353 0 677.835 XINC 0.001
TYPE 2 208.87 0 683.813 XINC 0.001
TYPE 2 209.387 0 689.791 XINC 0.001
TYPE 3 193.002 0 662.799 XINC 0.001
TYPE 3 193.52 0 668.779 XINC 0.001
TYPE 3 193.865 0 672.766 XINC 0.001
TYPE 3 194.382 0 678.746 XINC 0.001
TYPE 3 194.9 0 684.726 XINC 0.001
TYPE 3 195.417 0 690.706 XINC 0.001
LOAD GENERATION 1
TYPE 1 223.917 0 660.523 XINC 0.001
TYPE 1 224.453 0 666.499 XINC 0.001
TYPE 1 224.81 0 670.483 XINC 0.001
TYPE 1 225.346 0 676.459 XINC 0.001
TYPE 1 225.882 0 682.435 XINC 0.001
TYPE 1 226.418 0 688.411 XINC 0.001
TYPE 2 209.965 0 661.672 XINC 0.001
TYPE 2 210.5 0 667.649 XINC 0.001
TYPE 2 210.858 0 671.633 XINC 0.001
TYPE 2 211.394 0 677.61 XINC 0.001
TYPE 2 211.929 0 683.587 XINC 0.001
TYPE 2 212.465 0 689.563 XINC 0.001
TYPE 3 195.997 0 662.622 XINC 0.001
TYPE 3 196.533 0 668.6 XINC 0.001
TYPE 3 196.89 0 672.586 XINC 0.001
TYPE 3 197.426 0 678.564 XINC 0.001
TYPE 3 197.962 0 684.542 XINC 0.001
TYPE 3 198.498 0 690.521 XINC 0.001
LOAD GENERATION 1
TYPE 1 226.905 0 660.25 XINC 0.001
TYPE 1 227.459 0 666.224 XINC 0.001
TYPE 1 227.828 0 670.207 XINC 0.001

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TYPE 1 228.383 0 676.182 XINC 0.001
TYPE 1 228.937 0 682.156 XINC 0.001
TYPE 1 229.491 0 688.13 XINC 0.001
TYPE 2 212.956 0 661.443 XINC 0.001
TYPE 2 213.51 0 667.418 XINC 0.001
TYPE 2 213.88 0 671.401 XINC 0.001
TYPE 2 214.434 0 677.376 XINC 0.001
TYPE 2 214.988 0 683.351 XINC 0.001
TYPE 2 215.543 0 689.326 XINC 0.001
TYPE 3 198.991 0 662.435 XINC 0.001
TYPE 3 199.545 0 668.412 XINC 0.001
TYPE 3 199.915 0 672.396 XINC 0.001
TYPE 3 200.47 0 678.373 XINC 0.001
TYPE 3 201.024 0 684.35 XINC 0.001
TYPE 3 201.578 0 690.326 XINC 0.001
LOAD GENERATION 1
TYPE 1 229.891 0 659.968 XINC 0.001
TYPE 1 230.464 0 665.941 XINC 0.001
TYPE 1 230.846 0 669.923 XINC 0.001
TYPE 1 231.419 0 675.895 XINC 0.001
TYPE 1 231.991 0 681.868 XINC 0.001
TYPE 1 232.564 0 687.84 XINC 0.001
TYPE 2 215.946 0 661.204 XINC 0.001
TYPE 2 216.519 0 667.177 XINC 0.001
TYPE 2 216.901 0 671.16 XINC 0.001
TYPE 2 217.474 0 677.133 XINC 0.001
TYPE 2 218.046 0 683.106 XINC 0.001
TYPE 2 218.619 0 689.079 XINC 0.001
TYPE 3 201.985 0 662.239 XINC 0.001
TYPE 3 202.558 0 668.214 XINC 0.001
TYPE 3 202.939 0 672.198 XINC 0.001
TYPE 3 203.512 0 678.173 XINC 0.001
TYPE 3 204.085 0 684.148 XINC 0.001
TYPE 3 204.658 0 690.123 XINC 0.001
LOAD GENERATION 1
TYPE 1 232.877 0 659.677 XINC 0.001
TYPE 1 233.468 0 665.648 XINC 0.001
TYPE 1 233.862 0 669.629 XINC 0.001
TYPE 1 234.454 0 675.599 XINC 0.001
TYPE 1 235.045 0 681.57 XINC 0.001
TYPE 1 235.636 0 687.541 XINC 0.001
TYPE 2 218.936 0 660.956 XINC 0.001
TYPE 2 219.527 0 666.928 XINC 0.001
TYPE 2 219.921 0 670.909 XINC 0.001
TYPE 2 220.512 0 676.88 XINC 0.001
TYPE 2 221.104 0 682.851 XINC 0.001
TYPE 2 221.695 0 688.823 XINC 0.001
TYPE 3 204.978 0 662.035 XINC 0.001
TYPE 3 205.569 0 668.008 XINC 0.001
TYPE 3 205.963 0 671.99 XINC 0.001
TYPE 3 206.554 0 677.963 XINC 0.001
TYPE 3 207.146 0 683.936 XINC 0.001
TYPE 3 207.737 0 689.91 XINC 0.001
LOAD GENERATION 1
TYPE 1 235.862 0 659.377 XINC 0.001
TYPE 1 236.472 0 665.346 XINC 0.001
TYPE 1 236.878 0 669.325 XINC 0.001
TYPE 1 237.488 0 675.294 XINC 0.001
TYPE 1 238.097 0 681.263 XINC 0.001
TYPE 1 238.707 0 687.232 XINC 0.001
TYPE 2 221.925 0 660.699 XINC 0.001
TYPE 2 222.534 0 666.669 XINC 0.001
TYPE 2 222.941 0 670.648 XINC 0.001
TYPE 2 223.55 0 676.618 XINC 0.001
TYPE 2 224.16 0 682.587 XINC 0.001
TYPE 2 224.77 0 688.557 XINC 0.001
TYPE 3 207.97 0 661.82 XINC 0.001
TYPE 3 208.58 0 667.792 XINC 0.001
TYPE 3 208.986 0 671.773 XINC 0.001
TYPE 3 209.596 0 677.744 XINC 0.001
TYPE 3 210.206 0 683.715 XINC 0.001
TYPE 3 210.815 0 689.687 XINC 0.001
LOAD GENERATION 1
TYPE 1 238.846 0 659.068 XINC 0.001
TYPE 1 239.474 0 665.035 XINC 0.001
TYPE 1 239.893 0 669.013 XINC 0.001
TYPE 1 240.521 0 674.98 XINC 0.001
TYPE 1 241.149 0 680.947 XINC 0.001
TYPE 1 241.777 0 686.914 XINC 0.001

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TYPE 2 224.913 0 660.433 XINC 0.001
TYPE 2 225.541 0 666.4 XINC 0.001
TYPE 2 225.96 0 670.379 XINC 0.001
TYPE 2 226.588 0 676.346 XINC 0.001
TYPE 2 227.216 0 682.314 XINC 0.001
TYPE 2 227.844 0 688.282 XINC 0.001
TYPE 3 210.962 0 661.597 XINC 0.001
TYPE 3 211.59 0 667.566 XINC 0.001
TYPE 3 212.009 0 671.546 XINC 0.001
TYPE 3 212.637 0 677.516 XINC 0.001
TYPE 3 213.265 0 683.485 XINC 0.001
TYPE 3 213.893 0 689.454 XINC 0.001
LOAD GENERATION 1
TYPE 1 241.829 0 658.749 XINC 0.001
TYPE 1 242.476 0 664.714 XINC 0.001
TYPE 1 242.906 0 668.691 XINC 0.001
TYPE 1 243.553 0 674.656 XINC 0.001
TYPE 1 244.199 0 680.621 XINC 0.001
TYPE 1 244.845 0 686.586 XINC 0.001
TYPE 2 227.9 0 660.157 XINC 0.001
TYPE 2 228.547 0 666.123 XINC 0.001
TYPE 2 228.978 0 670.1 XINC 0.001
TYPE 2 229.624 0 676.066 XINC 0.001
TYPE 2 230.27 0 682.031 XINC 0.001
TYPE 2 230.917 0 687.997 XINC 0.001
TYPE 3 213.953 0 661.364 XINC 0.001
TYPE 3 214.599 0 667.332 XINC 0.001
TYPE 3 215.03 0 671.31 XINC 0.001
TYPE 3 215.677 0 677.278 XINC 0.001
TYPE 3 216.323 0 683.245 XINC 0.001
TYPE 3 216.97 0 689.213 XINC 0.001
LOAD GENERATION 1
TYPE 1 244.811 0 658.421 XINC 0.001
TYPE 1 245.476 0 664.385 XINC 0.001
TYPE 1 245.919 0 668.36 XINC 0.001
TYPE 1 246.584 0 674.323 XINC 0.001
TYPE 1 247.249 0 680.286 XINC 0.001
TYPE 1 247.913 0 686.249 XINC 0.001
TYPE 2 230.887 0 659.872 XINC 0.001
TYPE 2 231.552 0 665.836 XINC 0.001
TYPE 2 231.995 0 669.812 XINC 0.001
TYPE 2 232.66 0 675.775 XINC 0.001
TYPE 2 233.324 0 681.739 XINC 0.001
TYPE 2 233.989 0 687.703 XINC 0.001
TYPE 3 216.943 0 661.123 XINC 0.001
TYPE 3 217.608 0 667.088 XINC 0.001
TYPE 3 218.051 0 671.065 XINC 0.001
TYPE 3 218.716 0 677.031 XINC 0.001
TYPE 3 219.381 0 682.996 XINC 0.001
TYPE 3 220.046 0 688.961 XINC 0.001
LOAD GENERATION 1
TYPE 1 247.792 0 658.084 XINC 0.001
TYPE 1 248.475 0 664.045 XINC 0.001
TYPE 1 248.931 0 668.019 XINC 0.001
TYPE 1 249.614 0 673.98 XINC 0.001
TYPE 1 250.297 0 679.941 XINC 0.001
TYPE 1 250.98 0 685.903 XINC 0.001
TYPE 2 233.872 0 659.578 XINC 0.001
TYPE 2 234.556 0 665.54 XINC 0.001
TYPE 2 235.011 0 669.514 XINC 0.001
TYPE 2 235.694 0 675.476 XINC 0.001
TYPE 2 236.377 0 681.437 XINC 0.001
TYPE 2 237.06 0 687.399 XINC 0.001
TYPE 3 219.932 0 660.872 XINC 0.001
TYPE 3 220.616 0 666.835 XINC 0.001
TYPE 3 221.071 0 670.811 XINC 0.001
TYPE 3 221.755 0 676.774 XINC 0.001
TYPE 3 222.438 0 682.737 XINC 0.001
TYPE 3 223.121 0 688.701 XINC 0.001
LOAD GENERATION 1
TYPE 1 250.772 0 657.738 XINC 0.001
TYPE 1 251.474 0 663.697 XINC 0.001
TYPE 1 251.941 0 667.67 XINC 0.001
TYPE 1 252.643 0 673.629 XINC 0.001
TYPE 1 253.344 0 679.587 XINC 0.001
TYPE 1 254.046 0 685.546 XINC 0.001
TYPE 2 236.857 0 659.275 XINC 0.001
TYPE 2 237.559 0 665.234 XINC 0.001
TYPE 2 238.026 0 669.207 XINC 0.001

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TYPE 2 238.728 0 675.167 XINC 0.001
TYPE 2 239.429 0 681.126 XINC 0.001
TYPE 2 240.131 0 687.086 XINC 0.001
TYPE 3 222.921 0 660.611 XINC 0.001
TYPE 3 223.623 0 666.573 XINC 0.001
TYPE 3 224.091 0 670.547 XINC 0.001
TYPE 3 224.792 0 676.508 XINC 0.001
TYPE 3 225.494 0 682.469 XINC 0.001
TYPE 3 226.196 0 688.431 XINC 0.001
LOAD GENERATION 1
TYPE 1 253.751 0 657.383 XINC 0.001
TYPE 1 254.471 0 663.34 XINC 0.001
TYPE 1 254.951 0 667.311 XINC 0.001
TYPE 1 255.671 0 673.267 XINC 0.001
TYPE 1 256.391 0 679.224 XINC 0.001
TYPE 1 257.11 0 685.181 XINC 0.001
TYPE 2 239.841 0 658.963 XINC 0.001
TYPE 2 240.561 0 664.92 XINC 0.001
TYPE 2 241.041 0 668.891 XINC 0.001
TYPE 2 241.76 0 674.849 XINC 0.001
TYPE 2 242.48 0 680.806 XINC 0.001
TYPE 2 243.2 0 686.763 XINC 0.001
TYPE 3 225.909 0 660.342 XINC 0.001
TYPE 3 226.629 0 666.301 XINC 0.001
TYPE 3 227.109 0 670.274 XINC 0.001
TYPE 3 227.829 0 676.233 XINC 0.001
TYPE 3 228.549 0 682.192 XINC 0.001
TYPE 3 229.269 0 688.151 XINC 0.001
LOAD GENERATION 1
TYPE 1 256.729 0 657.018 XINC 0.001
TYPE 1 257.467 0 662.973 XINC 0.001
TYPE 1 257.959 0 666.943 XINC 0.001
TYPE 1 258.698 0 672.897 XINC 0.001
TYPE 1 259.436 0 678.851 XINC 0.001
TYPE 1 260.174 0 684.806 XINC 0.001
TYPE 2 242.823 0 658.641 XINC 0.001
TYPE 2 243.562 0 664.596 XINC 0.001
TYPE 2 244.054 0 668.566 XINC 0.001
TYPE 2 244.792 0 674.521 XINC 0.001
TYPE 2 245.53 0 680.476 XINC 0.001
TYPE 2 246.269 0 686.431 XINC 0.001
TYPE 3 228.896 0 660.063 XINC 0.001
TYPE 3 229.634 0 666.02 XINC 0.001
TYPE 3 230.127 0 669.991 XINC 0.001
TYPE 3 230.865 0 675.948 XINC 0.001
TYPE 3 231.604 0 681.905 XINC 0.001
TYPE 3 232.342 0 687.862 XINC 0.001
LOAD GENERATION 1
TYPE 1 259.706 0 656.645 XINC 0.001
TYPE 1 260.462 0 662.597 XINC 0.001
TYPE 1 260.967 0 666.565 XINC 0.001
TYPE 1 261.723 0 672.517 XINC 0.001
TYPE 1 262.48 0 678.469 XINC 0.001
TYPE 1 263.236 0 684.421 XINC 0.001
TYPE 2 245.805 0 658.31 XINC 0.001
TYPE 2 246.562 0 664.263 XINC 0.001
TYPE 2 247.066 0 668.231 XINC 0.001
TYPE 2 247.823 0 674.184 XINC 0.001
TYPE 2 248.579 0 680.137 XINC 0.001
TYPE 2 249.336 0 686.09 XINC 0.001
TYPE 3 231.882 0 659.775 XINC 0.001
TYPE 3 232.639 0 665.73 XINC 0.001
TYPE 3 233.143 0 669.7 XINC 0.001
TYPE 3 233.9 0 675.654 XINC 0.001
TYPE 3 234.657 0 681.609 XINC 0.001
TYPE 3 235.414 0 687.563 XINC 0.001
LOAD GENERATION 1
TYPE 1 262.681 0 656.262 XINC 0.001
TYPE 1 263.456 0 662.212 XINC 0.001
TYPE 1 263.973 0 666.178 XINC 0.001
TYPE 1 264.747 0 672.128 XINC 0.001
TYPE 1 265.522 0 678.078 XINC 0.001
TYPE 1 266.297 0 684.027 XINC 0.001
TYPE 2 248.786 0 657.97 XINC 0.001
TYPE 2 249.561 0 663.92 XINC 0.001
TYPE 2 250.077 0 667.887 XINC 0.001
TYPE 2 250.852 0 673.838 XINC 0.001
TYPE 2 251.627 0 679.788 XINC 0.001
TYPE 2 252.402 0 685.738 XINC 0.001

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TYPE 3 234.867 0 659.478 XINC 0.001
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TYPE 3 236.159 0 669.399 XINC 0.001
TYPE 3 236.935 0 675.351 XINC 0.001
TYPE 3 237.71 0 681.303 XINC 0.001
TYPE 3 238.485 0 687.255 XINC 0.001
LOAD GENERATION 1
TYPE 1 265.655 0 655.87 XINC 0.001
TYPE 1 266.449 0 661.817 XINC 0.001
TYPE 1 266.977 0 665.782 XINC 0.001
TYPE 1 267.771 0 671.729 XINC 0.001
TYPE 1 268.564 0 677.677 XINC 0.001
TYPE 1 269.357 0 683.624 XINC 0.001
TYPE 2 251.765 0 657.621 XINC 0.001
TYPE 2 252.559 0 663.569 XINC 0.001
TYPE 2 253.088 0 667.534 XINC 0.001
TYPE 2 253.881 0 673.482 XINC 0.001
TYPE 2 254.674 0 679.43 XINC 0.001
TYPE 2 255.468 0 685.378 XINC 0.001
TYPE 3 237.852 0 659.172 XINC 0.001
TYPE 3 238.645 0 665.122 XINC 0.001
TYPE 3 239.174 0 669.088 XINC 0.001
TYPE 3 239.968 0 675.038 XINC 0.001
TYPE 3 240.761 0 680.988 XINC 0.001
TYPE 3 241.555 0 686.937 XINC 0.001
LOAD GENERATION 1
TYPE 1 268.628 0 655.469 XINC 0.001
TYPE 1 269.44 0 661.413 XINC 0.001
TYPE 1 269.981 0 665.377 XINC 0.001
TYPE 1 270.793 0 671.322 XINC 0.001
TYPE 1 271.604 0 677.266 XINC 0.001
TYPE 1 272.416 0 683.211 XINC 0.001
TYPE 2 254.744 0 657.263 XINC 0.001
TYPE 2 255.556 0 663.208 XINC 0.001
TYPE 2 256.097 0 667.172 XINC 0.001
TYPE 2 256.908 0 673.117 XINC 0.001
TYPE 2 257.72 0 679.063 XINC 0.001
TYPE 2 258.532 0 685.008 XINC 0.001
TYPE 3 240.835 0 658.856 XINC 0.001
TYPE 3 241.647 0 664.804 XINC 0.001
TYPE 3 242.188 0 668.769 XINC 0.001
TYPE 3 243 0 674.716 XINC 0.001
TYPE 3 243.812 0 680.663 XINC 0.001
TYPE 3 244.624 0 686.61 XINC 0.001
LOAD GENERATION 1
TYPE 1 271.6 0 655.058 XINC 0.001
TYPE 1 272.43 0 661.001 XINC 0.001
TYPE 1 272.983 0 664.962 XINC 0.001
TYPE 1 273.813 0 670.904 XINC 0.001
TYPE 1 274.643 0 676.847 XINC 0.001
TYPE 1 275.473 0 682.789 XINC 0.001
TYPE 2 257.721 0 656.895 XINC 0.001
TYPE 2 258.551 0 662.838 XINC 0.001
TYPE 2 259.105 0 666.8 XINC 0.001
TYPE 2 259.935 0 672.743 XINC 0.001
TYPE 2 260.765 0 678.686 XINC 0.001
TYPE 2 261.595 0 684.629 XINC 0.001
TYPE 3 243.817 0 658.532 XINC 0.001
TYPE 3 244.648 0 664.476 XINC 0.001
TYPE 3 245.201 0 668.44 XINC 0.001
TYPE 3 246.031 0 674.384 XINC 0.001
TYPE 3 246.862 0 680.329 XINC 0.001
TYPE 3 247.692 0 686.274 XINC 0.001
LOAD GENERATION 1
TYPE 1 274.571 0 654.639 XINC 0.001
TYPE 1 275.419 0 660.578 XINC 0.001
TYPE 1 275.984 0 664.538 XINC 0.001
TYPE 1 276.833 0 670.478 XINC 0.001
TYPE 1 277.681 0 676.418 XINC 0.001
TYPE 1 278.529 0 682.358 XINC 0.001
TYPE 2 260.698 0 656.518 XINC 0.001
TYPE 2 261.546 0 662.459 XINC 0.001
TYPE 2 262.111 0 666.419 XINC 0.001
TYPE 2 262.96 0 672.359 XINC 0.001
TYPE 2 263.808 0 678.299 XINC 0.001
TYPE 2 264.656 0 684.24 XINC 0.001
TYPE 3 246.799 0 658.198 XINC 0.001
TYPE 3 247.647 0 664.14 XINC 0.001
TYPE 3 248.213 0 668.101 XINC 0.001

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TYPE 3 249.062 0 674.044 XINC 0.001
TYPE 3 249.91 0 679.986 XINC 0.001
TYPE 3 250.759 0 685.928 XINC 0.001
LOAD GENERATION 1
TYPE 1 277.54 0 654.21 XINC 0.001
TYPE 1 278.406 0 660.147 XINC 0.001
TYPE 1 278.984 0 664.105 XINC 0.001
TYPE 1 279.851 0 670.042 XINC 0.001
TYPE 1 280.717 0 675.979 XINC 0.001
TYPE 1 281.584 0 681.917 XINC 0.001
TYPE 2 263.673 0 656.132 XINC 0.001
TYPE 2 264.539 0 662.07 XINC 0.001
TYPE 2 265.117 0 666.028 XINC 0.001
TYPE 2 265.984 0 671.966 XINC 0.001
TYPE 2 266.85 0 677.904 XINC 0.001
TYPE 2 267.717 0 683.841 XINC 0.001
TYPE 3 249.779 0 657.855 XINC 0.001
TYPE 3 250.646 0 663.794 XINC 0.001
TYPE 3 251.224 0 667.754 XINC 0.001
TYPE 3 252.091 0 673.693 XINC 0.001
TYPE 3 252.958 0 679.633 XINC 0.001
TYPE 3 253.824 0 685.572 XINC 0.001
LOAD GENERATION 1
TYPE 1 280.508 0 653.772 XINC 0.001
TYPE 1 281.393 0 659.707 XINC 0.001
TYPE 1 281.983 0 663.663 XINC 0.001
TYPE 1 282.867 0 669.597 XINC 0.001
TYPE 1 283.752 0 675.532 XINC 0.001
TYPE 1 284.637 0 681.466 XINC 0.001
TYPE 2 266.646 0 655.737 XINC 0.001
TYPE 2 267.531 0 661.672 XINC 0.001
TYPE 2 268.121 0 665.629 XINC 0.001
TYPE 2 269.006 0 671.564 XINC 0.001
TYPE 2 269.891 0 677.499 XINC 0.001
TYPE 2 270.776 0 683.434 XINC 0.001
TYPE 3 252.758 0 657.503 XINC 0.001
TYPE 3 253.644 0 663.439 XINC 0.001
TYPE 3 254.234 0 667.397 XINC 0.001
TYPE 3 255.119 0 673.334 XINC 0.001
TYPE 3 256.004 0 679.271 XINC 0.001
TYPE 3 256.889 0 685.208 XINC 0.001
LOAD GENERATION 1
TYPE 1 283.474 0 653.325 XINC 0.001
TYPE 1 284.377 0 659.257 XINC 0.001
TYPE 1 284.98 0 663.211 XINC 0.001
TYPE 1 285.883 0 669.143 XINC 0.001
TYPE 1 286.786 0 675.075 XINC 0.001
TYPE 1 287.689 0 681.006 XINC 0.001
TYPE 2 269.619 0 655.333 XINC 0.001
TYPE 2 270.522 0 661.265 XINC 0.001
TYPE 2 271.125 0 665.22 XINC 0.001
TYPE 2 272.028 0 671.152 XINC 0.001
TYPE 2 272.931 0 677.084 XINC 0.001
TYPE 2 273.834 0 683.017 XINC 0.001
TYPE 3 255.736 0 657.141 XINC 0.001
TYPE 3 256.64 0 663.075 XINC 0.001
TYPE 3 257.242 0 667.031 XINC 0.001
TYPE 3 258.146 0 672.965 XINC 0.001
TYPE 3 259.049 0 678.899 XINC 0.001
TYPE 3 259.953 0 684.833 XINC 0.001
LOAD GENERATION 1
TYPE 1 286.439 0 652.869 XINC 0.001
TYPE 1 287.361 0 658.798 XINC 0.001
TYPE 1 287.975 0 662.75 XINC 0.001
TYPE 1 288.897 0 668.679 XINC 0.001
TYPE 1 289.818 0 674.608 XINC 0.001
TYPE 1 290.739 0 680.537 XINC 0.001
TYPE 2 272.59 0 654.92 XINC 0.001
TYPE 2 273.512 0 660.849 XINC 0.001
TYPE 2 274.126 0 664.802 XINC 0.001
TYPE 2 275.048 0 670.731 XINC 0.001
TYPE 2 275.969 0 676.661 XINC 0.001
TYPE 2 276.891 0 682.59 XINC 0.001
TYPE 3 258.714 0 656.77 XINC 0.001
TYPE 3 259.635 0 662.702 XINC 0.001
TYPE 3 260.25 0 666.656 XINC 0.001
TYPE 3 261.172 0 672.587 XINC 0.001
TYPE 3 262.093 0 678.518 XINC 0.001
TYPE 3 263.015 0 684.449 XINC 0.001

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LOAD GENERATION 1  
 TYPE 1 289.403 0 652.404 XINC 0.001  
 TYPE 1 290.343 0 658.33 XINC 0.001  
 TYPE 1 290.969 0 662.28 XINC 0.001  
 TYPE 1 291.909 0 668.206 XINC 0.001  
 TYPE 1 292.849 0 674.132 XINC 0.001  
 TYPE 1 293.788 0 680.058 XINC 0.001  
 TYPE 2 275.561 0 654.497 XINC 0.001  
 TYPE 2 276.5 0 660.423 XINC 0.001  
 TYPE 2 277.127 0 664.374 XINC 0.001  
 TYPE 2 278.067 0 670.301 XINC 0.001  
 TYPE 2 279.007 0 676.228 XINC 0.001  
 TYPE 2 279.946 0 682.154 XINC 0.001  
 TYPE 3 261.689 0 656.391 XINC 0.001  
 TYPE 3 262.629 0 662.319 XINC 0.001  
 TYPE 3 263.256 0 666.271 XINC 0.001  
 TYPE 3 264.196 0 672.2 XINC 0.001  
 TYPE 3 265.136 0 678.128 XINC 0.001  
 TYPE 3 266.076 0 684.056 XINC 0.001

LOAD GENERATION 1  
 TYPE 1 292.365 0 651.929 XINC 0.001  
 TYPE 1 293.323 0 657.852 XINC 0.001  
 TYPE 1 293.962 0 661.801 XINC 0.001  
 TYPE 1 294.92 0 667.724 XINC 0.001  
 TYPE 1 295.878 0 673.647 XINC 0.001  
 TYPE 1 296.836 0 679.57 XINC 0.001  
 TYPE 2 278.529 0 654.065 XINC 0.001  
 TYPE 2 279.487 0 659.989 XINC 0.001  
 TYPE 2 280.126 0 663.938 XINC 0.001  
 TYPE 2 281.084 0 669.861 XINC 0.001  
 TYPE 2 282.042 0 675.785 XINC 0.001  
 TYPE 2 283 0 681.709 XINC 0.001  
 TYPE 3 264.664 0 656.002 XINC 0.001  
 TYPE 3 265.622 0 661.927 XINC 0.001  
 TYPE 3 266.261 0 665.877 XINC 0.001  
 TYPE 3 267.22 0 671.803 XINC 0.001  
 TYPE 3 268.178 0 677.728 XINC 0.001  
 TYPE 3 269.136 0 683.654 XINC 0.001

LOAD GENERATION 1  
 TYPE 1 295.326 0 651.446 XINC 0.001  
 TYPE 1 296.302 0 657.366 XINC 0.001  
 TYPE 1 296.953 0 661.313 XINC 0.001  
 TYPE 1 297.929 0 667.233 XINC 0.001  
 TYPE 1 298.906 0 673.153 XINC 0.001  
 TYPE 1 299.882 0 679.073 XINC 0.001  
 TYPE 2 281.497 0 653.624 XINC 0.001  
 TYPE 2 282.473 0 659.545 XINC 0.001  
 TYPE 2 283.124 0 663.492 XINC 0.001  
 TYPE 2 284.1 0 669.413 XINC 0.001  
 TYPE 2 285.077 0 675.333 XINC 0.001  
 TYPE 2 286.053 0 681.254 XINC 0.001  
 TYPE 3 267.637 0 655.603 XINC 0.001  
 TYPE 3 268.614 0 661.526 XINC 0.001  
 TYPE 3 269.265 0 665.474 XINC 0.001  
 TYPE 3 270.242 0 671.397 XINC 0.001  
 TYPE 3 271.218 0 677.319 XINC 0.001  
 TYPE 3 272.195 0 683.241 XINC 0.001

LOAD GENERATION 1  
 TYPE 1 298.285 0 650.953 XINC 0.001  
 TYPE 1 299.28 0 656.87 XINC 0.001  
 TYPE 1 299.943 0 660.815 XINC 0.001  
 TYPE 1 300.937 0 666.732 XINC 0.001  
 TYPE 1 301.932 0 672.649 XINC 0.001  
 TYPE 1 302.926 0 678.566 XINC 0.001  
 TYPE 2 284.463 0 653.174 XINC 0.001  
 TYPE 2 285.457 0 659.092 XINC 0.001  
 TYPE 2 286.12 0 663.037 XINC 0.001  
 TYPE 2 287.115 0 668.954 XINC 0.001  
 TYPE 2 288.11 0 674.872 XINC 0.001  
 TYPE 2 289.104 0 680.79 XINC 0.001  
 TYPE 3 270.61 0 655.196 XINC 0.001  
 TYPE 3 271.605 0 661.116 XINC 0.001  
 TYPE 3 272.268 0 665.062 XINC 0.001  
 TYPE 3 273.263 0 670.981 XINC 0.001  
 TYPE 3 274.258 0 676.901 XINC 0.001  
 TYPE 3 275.252 0 682.82 XINC 0.001

LOAD GENERATION 1  
 TYPE 1 301.243 0 650.451 XINC 0.001  
 TYPE 1 302.256 0 656.365 XINC 0.001

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TYPE 1 302.931 0 660.308 XINC 0.001
TYPE 1 303.944 0 666.222 XINC 0.001
TYPE 1 304.957 0 672.136 XINC 0.001
TYPE 1 305.969 0 678.049 XINC 0.001
TYPE 2 287.427 0 652.715 XINC 0.001
TYPE 2 288.44 0 658.629 XINC 0.001
TYPE 2 289.116 0 662.573 XINC 0.001
TYPE 2 290.128 0 668.487 XINC 0.001
TYPE 2 291.141 0 674.401 XINC 0.001
TYPE 2 292.154 0 680.316 XINC 0.001
TYPE 3 273.581 0 654.78 XINC 0.001
TYPE 3 274.594 0 660.696 XINC 0.001
TYPE 3 275.269 0 664.64 XINC 0.001
TYPE 3 276.282 0 670.557 XINC 0.001
TYPE 3 277.295 0 676.473 XINC 0.001
TYPE 3 278.309 0 682.389 XINC 0.001
LOAD GENERATION 1
TYPE 1 304.199 0 649.94 XINC 0.001
TYPE 1 305.23 0 655.851 XINC 0.001
TYPE 1 305.918 0 659.792 XINC 0.001
TYPE 1 306.949 0 665.702 XINC 0.001
TYPE 1 307.98 0 671.613 XINC 0.001
TYPE 1 309.01 0 677.524 XINC 0.001
TYPE 2 290.391 0 652.247 XINC 0.001
TYPE 2 291.422 0 658.158 XINC 0.001
TYPE 2 292.109 0 662.099 XINC 0.001
TYPE 2 293.14 0 668.01 XINC 0.001
TYPE 2 294.171 0 673.922 XINC 0.001
TYPE 2 295.202 0 679.833 XINC 0.001
TYPE 3 276.55 0 654.354 XINC 0.001
TYPE 3 277.582 0 660.267 XINC 0.001
TYPE 3 278.269 0 664.209 XINC 0.001
TYPE 3 279.301 0 670.122 XINC 0.001
TYPE 3 280.332 0 676.036 XINC 0.001
TYPE 3 281.363 0 681.949 XINC 0.001
LOAD GENERATION 1
TYPE 1 307.154 0 649.42 XINC 0.001
TYPE 1 308.203 0 655.328 XINC 0.001
TYPE 1 308.903 0 659.266 XINC 0.001
TYPE 1 309.952 0 665.174 XINC 0.001
TYPE 1 311.001 0 671.081 XINC 0.001
TYPE 1 312.05 0 676.989 XINC 0.001
TYPE 2 293.352 0 651.769 XINC 0.001
TYPE 2 294.402 0 657.677 XINC 0.001
TYPE 2 295.101 0 661.616 XINC 0.001
TYPE 2 296.151 0 667.524 XINC 0.001
TYPE 2 297.2 0 673.432 XINC 0.001
TYPE 2 298.249 0 679.34 XINC 0.001
TYPE 3 279.519 0 653.919 XINC 0.001
TYPE 3 280.568 0 659.829 XINC 0.001
TYPE 3 281.268 0 663.769 XINC 0.001
TYPE 3 282.318 0 669.679 XINC 0.001
TYPE 3 283.367 0 675.589 XINC 0.001
TYPE 3 284.417 0 681.499 XINC 0.001
LOAD GENERATION 1
TYPE 1 310.107 0 648.891 XINC 0.001
TYPE 1 311.174 0 654.795 XINC 0.001
TYPE 1 311.886 0 658.732 XINC 0.001
TYPE 1 312.953 0 664.636 XINC 0.001
TYPE 1 314.021 0 670.54 XINC 0.001
TYPE 1 315.088 0 676.444 XINC 0.001
TYPE 2 296.313 0 651.283 XINC 0.001
TYPE 2 297.38 0 657.187 XINC 0.001
TYPE 2 298.092 0 661.124 XINC 0.001
TYPE 2 299.159 0 667.029 XINC 0.001
TYPE 2 300.227 0 672.934 XINC 0.001
TYPE 2 301.294 0 678.839 XINC 0.001
TYPE 3 282.486 0 653.475 XINC 0.001
TYPE 3 283.553 0 659.382 XINC 0.001
TYPE 3 284.265 0 663.32 XINC 0.001
TYPE 3 285.333 0 669.226 XINC 0.001
TYPE 3 286.401 0 675.133 XINC 0.001
TYPE 3 287.469 0 681.04 XINC 0.001
LOAD GENERATION 1
TYPE 1 313.058 0 648.353 XINC 0.001
TYPE 1 314.144 0 654.254 XINC 0.001
TYPE 1 314.867 0 658.188 XINC 0.001
TYPE 1 315.953 0 664.089 XINC 0.001
TYPE 1 317.039 0 669.99 XINC 0.001

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TYPE 1 318.124 0 675.891 XINC 0.001
TYPE 2 299.271 0 650.787 XINC 0.001
TYPE 2 300.357 0 656.688 XINC 0.001
TYPE 2 301.081 0 660.623 XINC 0.001
TYPE 2 302.167 0 666.524 XINC 0.001
TYPE 2 303.252 0 672.426 XINC 0.001
TYPE 2 304.338 0 678.327 XINC 0.001
TYPE 3 285.451 0 653.022 XINC 0.001
TYPE 3 286.537 0 658.926 XINC 0.001
TYPE 3 287.261 0 662.861 XINC 0.001
TYPE 3 288.347 0 668.764 XINC 0.001
TYPE 3 289.433 0 674.668 XINC 0.001
TYPE 3 290.519 0 680.571 XINC 0.001
LOAD GENERATION 1
TYPE 1 316.008 0 647.806 XINC 0.001
TYPE 1 317.112 0 653.703 XINC 0.001
TYPE 1 317.847 0 657.635 XINC 0.001
TYPE 1 318.951 0 663.532 XINC 0.001
TYPE 1 320.055 0 669.43 XINC 0.001
TYPE 1 321.159 0 675.328 XINC 0.001
TYPE 2 302.229 0 650.282 XINC 0.001
TYPE 2 303.333 0 656.18 XINC 0.001
TYPE 2 304.069 0 660.112 XINC 0.001
TYPE 2 305.172 0 666.01 XINC 0.001
TYPE 2 306.276 0 671.909 XINC 0.001
TYPE 2 307.38 0 677.807 XINC 0.001
TYPE 3 288.415 0 652.56 XINC 0.001
TYPE 3 289.52 0 658.46 XINC 0.001
TYPE 3 290.256 0 662.393 XINC 0.001
TYPE 3 291.36 0 668.293 XINC 0.001
TYPE 3 292.464 0 674.193 XINC 0.001
TYPE 3 293.568 0 680.093 XINC 0.001
LOAD GENERATION 1
TYPE 1 318.956 0 647.249 XINC 0.001
TYPE 1 320.078 0 653.143 XINC 0.001
TYPE 1 320.826 0 657.073 XINC 0.001
TYPE 1 321.948 0 662.967 XINC 0.001
TYPE 1 323.07 0 668.861 XINC 0.001
TYPE 1 324.192 0 674.755 XINC 0.001
TYPE 2 305.184 0 649.768 XINC 0.001
TYPE 2 306.306 0 655.663 XINC 0.001
TYPE 2 307.054 0 659.593 XINC 0.001
TYPE 2 308.177 0 665.487 XINC 0.001
TYPE 2 309.299 0 671.382 XINC 0.001
TYPE 2 310.421 0 677.277 XINC 0.001
TYPE 3 291.378 0 652.089 XINC 0.001
TYPE 3 292.5 0 657.985 XINC 0.001
TYPE 3 293.249 0 661.916 XINC 0.001
TYPE 3 294.371 0 667.813 XINC 0.001
TYPE 3 295.494 0 673.709 XINC 0.001
TYPE 3 296.616 0 679.606 XINC 0.001
LOAD GENERATION 1
TYPE 1 321.902 0 646.684 XINC 0.001
TYPE 1 323.042 0 652.574 XINC 0.001
TYPE 1 323.802 0 656.501 XINC 0.001
TYPE 1 324.942 0 662.392 XINC 0.001
TYPE 1 326.082 0 668.283 XINC 0.001
TYPE 1 327.223 0 674.173 XINC 0.001
TYPE 2 308.138 0 649.245 XINC 0.001
TYPE 2 309.279 0 655.136 XINC 0.001
TYPE 2 310.039 0 659.064 XINC 0.001
TYPE 2 311.179 0 664.955 XINC 0.001
TYPE 2 312.319 0 670.846 XINC 0.001
TYPE 2 313.46 0 676.737 XINC 0.001
TYPE 3 294.339 0 651.608 XINC 0.001
TYPE 3 295.48 0 657.501 XINC 0.001
TYPE 3 296.24 0 661.43 XINC 0.001
TYPE 3 297.381 0 667.323 XINC 0.001
TYPE 3 298.521 0 673.216 XINC 0.001
TYPE 3 299.662 0 679.109 XINC 0.001
LOAD GENERATION 1
TYPE 1 324.846 0 646.109 XINC 0.001
TYPE 1 326.005 0 651.996 XINC 0.001
TYPE 1 326.777 0 655.921 XINC 0.001
TYPE 1 327.935 0 661.808 XINC 0.001
TYPE 1 329.094 0 667.695 XINC 0.001
TYPE 1 330.252 0 673.582 XINC 0.001
TYPE 2 311.091 0 648.713 XINC 0.001
TYPE 2 312.249 0 654.6 XINC 0.001

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TYPE 2 315.338 0 670.301 XINC 0.001
TYPE 2 316.497 0 676.189 XINC 0.001
TYPE 3 297.299 0 651.118 XINC 0.001
TYPE 3 298.458 0 657.008 XINC 0.001
TYPE 3 299.23 0 660.934 XINC 0.001
TYPE 3 300.389 0 666.824 XINC 0.001
TYPE 3 301.548 0 672.713 XINC 0.001
TYPE 3 302.707 0 678.603 XINC 0.001
LOAD GENERATION 1
TYPE 1 327.789 0 645.525 XINC 0.001
TYPE 1 328.966 0 651.409 XINC 0.001
TYPE 1 329.75 0 655.331 XINC 0.001
TYPE 1 330.926 0 661.215 XINC 0.001
TYPE 1 332.103 0 667.098 XINC 0.001
TYPE 1 333.279 0 672.982 XINC 0.001
TYPE 2 314.042 0 648.171 XINC 0.001
TYPE 2 315.218 0 654.056 XINC 0.001
TYPE 2 316.003 0 657.978 XINC 0.001
TYPE 2 317.179 0 663.862 XINC 0.001
TYPE 2 318.356 0 669.747 XINC 0.001
TYPE 2 319.532 0 675.631 XINC 0.001
TYPE 3 300.257 0 650.62 XINC 0.001
TYPE 3 301.434 0 656.505 XINC 0.001
TYPE 3 302.219 0 660.429 XINC 0.001
TYPE 3 303.396 0 666.315 XINC 0.001
TYPE 3 304.573 0 672.201 XINC 0.001
TYPE 3 305.75 0 678.087 XINC 0.001
LOAD GENERATION 1
TYPE 1 330.73 0 644.932 XINC 0.001
TYPE 1 331.924 0 650.812 XINC 0.001
TYPE 1 332.721 0 654.732 XINC 0.001
TYPE 1 333.915 0 660.612 XINC 0.001
TYPE 1 335.11 0 666.492 XINC 0.001
TYPE 1 336.305 0 672.372 XINC 0.001
TYPE 2 316.991 0 647.621 XINC 0.001
TYPE 2 318.185 0 653.502 XINC 0.001
TYPE 2 318.982 0 657.422 XINC 0.001
TYPE 2 320.177 0 663.302 XINC 0.001
TYPE 2 321.371 0 669.183 XINC 0.001
TYPE 2 322.566 0 675.063 XINC 0.001
TYPE 3 303.214 0 650.112 XINC 0.001
TYPE 3 304.409 0 655.994 XINC 0.001
TYPE 3 305.206 0 659.915 XINC 0.001
TYPE 3 306.401 0 665.798 XINC 0.001
TYPE 3 307.596 0 671.68 XINC 0.001
TYPE 3 308.791 0 677.562 XINC 0.001
LOAD GENERATION 1
TYPE 1 333.669 0 644.331 XINC 0.001
TYPE 1 334.882 0 650.207 XINC 0.001
TYPE 1 335.69 0 654.124 XINC 0.001
TYPE 1 336.903 0 660 XINC 0.001
TYPE 1 338.116 0 665.877 XINC 0.001
TYPE 1 339.328 0 671.753 XINC 0.001
TYPE 2 319.938 0 647.062 XINC 0.001
TYPE 2 321.151 0 652.938 XINC 0.001
TYPE 2 321.959 0 656.856 XINC 0.001
TYPE 2 323.172 0 662.733 XINC 0.001
TYPE 2 324.385 0 668.61 XINC 0.001
TYPE 2 325.598 0 674.486 XINC 0.001
TYPE 3 306.169 0 649.595 XINC 0.001
TYPE 3 307.382 0 655.473 XINC 0.001
TYPE 3 308.191 0 659.392 XINC 0.001
TYPE 3 309.404 0 665.271 XINC 0.001
TYPE 3 310.617 0 671.149 XINC 0.001
TYPE 3 311.831 0 677.028 XINC 0.001
LOAD GENERATION 1
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TYPE 1 337.837 0 649.592 XINC 0.001
TYPE 1 338.657 0 653.507 XINC 0.001
TYPE 1 339.888 0 659.379 XINC 0.001
TYPE 1 341.119 0 665.252 XINC 0.001
TYPE 1 342.35 0 671.124 XINC 0.001
TYPE 2 322.884 0 646.493 XINC 0.001
TYPE 2 324.115 0 652.366 XINC 0.001
TYPE 2 324.935 0 656.281 XINC 0.001
TYPE 2 326.166 0 662.154 XINC 0.001
TYPE 2 327.397 0 668.027 XINC 0.001

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TYPE 3 310.354 0 654.943 XINC 0.001
TYPE 3 311.175 0 658.86 XINC 0.001
TYPE 3 312.406 0 664.735 XINC 0.001
TYPE 3 313.637 0 670.609 XINC 0.001
TYPE 3 314.869 0 676.484 XINC 0.001
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TYPE 1 341.623 0 652.881 XINC 0.001
TYPE 1 342.872 0 658.749 XINC 0.001
TYPE 1 344.121 0 664.618 XINC 0.001
TYPE 1 345.37 0 670.486 XINC 0.001
TYPE 2 325.827 0 645.915 XINC 0.001
TYPE 2 327.077 0 651.785 XINC 0.001
TYPE 2 327.909 0 655.697 XINC 0.001
TYPE 2 329.158 0 661.566 XINC 0.001
TYPE 2 330.407 0 667.436 XINC 0.001
TYPE 2 331.656 0 673.305 XINC 0.001
TYPE 3 312.075 0 648.533 XINC 0.001
TYPE 3 313.324 0 654.404 XINC 0.001
TYPE 3 314.157 0 658.318 XINC 0.001
TYPE 3 315.406 0 664.189 XINC 0.001
TYPE 3 316.656 0 670.06 XINC 0.001
TYPE 3 317.905 0 675.931 XINC 0.001
LOAD GENERATION 1
TYPE 1 342.475 0 642.471 XINC 0.001
TYPE 1 343.742 0 648.335 XINC 0.001
TYPE 1 344.586 0 652.245 XINC 0.001
TYPE 1 345.853 0 658.11 XINC 0.001
TYPE 1 347.12 0 663.975 XINC 0.001
TYPE 1 348.387 0 669.839 XINC 0.001
TYPE 2 328.77 0 645.329 XINC 0.001
TYPE 2 330.037 0 651.194 XINC 0.001
TYPE 2 330.881 0 655.104 XINC 0.001
TYPE 2 332.149 0 660.969 XINC 0.001
TYPE 2 333.416 0 666.835 XINC 0.001
TYPE 2 334.683 0 672.7 XINC 0.001
TYPE 3 315.025 0 647.989 XINC 0.001
TYPE 3 316.292 0 653.856 XINC 0.001
TYPE 3 317.137 0 657.767 XINC 0.001
TYPE 3 318.405 0 663.635 XINC 0.001
TYPE 3 319.672 0 669.502 XINC 0.001
TYPE 3 320.94 0 675.369 XINC 0.001
LOAD GENERATION 1
TYPE 1 345.406 0 641.833 XINC 0.001
TYPE 1 346.691 0 647.693 XINC 0.001
TYPE 1 347.548 0 651.601 XINC 0.001
TYPE 1 348.833 0 657.461 XINC 0.001
TYPE 1 350.118 0 663.322 XINC 0.001
TYPE 1 351.403 0 669.183 XINC 0.001
TYPE 2 331.71 0 644.733 XINC 0.001
TYPE 2 332.995 0 650.594 XINC 0.001
TYPE 2 333.852 0 654.502 XINC 0.001
TYPE 2 335.137 0 660.363 XINC 0.001
TYPE 2 336.422 0 666.224 XINC 0.001
TYPE 2 337.708 0 672.086 XINC 0.001
TYPE 3 317.973 0 647.436 XINC 0.001
TYPE 3 319.259 0 653.299 XINC 0.001
TYPE 3 320.116 0 657.208 XINC 0.001
TYPE 3 321.402 0 663.071 XINC 0.001
TYPE 3 322.687 0 668.934 XINC 0.001
TYPE 3 323.973 0 674.797 XINC 0.001
LOAD GENERATION 1
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TYPE 1 349.639 0 647.042 XINC 0.001
TYPE 1 350.507 0 650.947 XINC 0.001
TYPE 1 351.811 0 656.804 XINC 0.001
TYPE 1 353.114 0 662.66 XINC 0.001
TYPE 1 354.417 0 668.517 XINC 0.001
TYPE 2 334.648 0 644.128 XINC 0.001
TYPE 2 335.951 0 649.985 XINC 0.001
TYPE 2 336.82 0 653.89 XINC 0.001
TYPE 2 338.124 0 659.748 XINC 0.001
TYPE 2 339.427 0 665.605 XINC 0.001
TYPE 2 340.73 0 671.462 XINC 0.001
TYPE 3 320.92 0 646.873 XINC 0.001
TYPE 3 322.224 0 652.732 XINC 0.001

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TYPE 3 323.093 0 656.638 XINC 0.001
TYPE 3 324.396 0 662.497 XINC 0.001
TYPE 3 325.7 0 668.357 XINC 0.001
TYPE 3 327.004 0 674.216 XINC 0.001
LOAD GENERATION 1
TYPE 1 351.263 0 640.53 XINC 0.001
TYPE 1 352.584 0 646.382 XINC 0.001
TYPE 1 353.465 0 650.284 XINC 0.001
TYPE 1 354.786 0 656.137 XINC 0.001
TYPE 1 356.107 0 661.99 XINC 0.001
TYPE 1 357.429 0 667.842 XINC 0.001
TYPE 2 337.585 0 643.514 XINC 0.001
TYPE 2 338.906 0 649.367 XINC 0.001
TYPE 2 339.787 0 653.27 XINC 0.001
TYPE 2 341.108 0 659.123 XINC 0.001
TYPE 2 342.43 0 664.976 XINC 0.001
TYPE 2 343.751 0 670.83 XINC 0.001
TYPE 3 323.865 0 646.301 XINC 0.001
TYPE 3 325.187 0 652.157 XINC 0.001
TYPE 3 326.068 0 656.06 XINC 0.001
TYPE 3 327.39 0 661.915 XINC 0.001
TYPE 3 328.711 0 667.77 XINC 0.001
TYPE 3 330.033 0 673.625 XINC 0.001
LOAD GENERATION 1
TYPE 1 354.188 0 639.864 XINC 0.001
TYPE 1 355.527 0 645.713 XINC 0.001
TYPE 1 356.42 0 649.612 XINC 0.001
TYPE 1 357.759 0 655.461 XINC 0.001
TYPE 1 359.099 0 661.309 XINC 0.001
TYPE 1 360.438 0 667.158 XINC 0.001
TYPE 2 340.519 0 642.891 XINC 0.001
TYPE 2 341.859 0 648.74 XINC 0.001
TYPE 2 342.752 0 652.64 XINC 0.001
TYPE 2 344.091 0 658.489 XINC 0.001
TYPE 2 345.43 0 664.338 XINC 0.001
TYPE 2 346.77 0 670.187 XINC 0.001
TYPE 3 326.808 0 645.721 XINC 0.001
TYPE 3 328.148 0 651.572 XINC 0.001
TYPE 3 329.041 0 655.472 XINC 0.001
TYPE 3 330.381 0 661.323 XINC 0.001
TYPE 3 331.721 0 667.174 XINC 0.001
TYPE 3 333.061 0 673.025 XINC 0.001
LOAD GENERATION 1
TYPE 1 357.111 0 639.19 XINC 0.001
TYPE 1 358.469 0 645.035 XINC 0.001
TYPE 1 359.373 0 648.931 XINC 0.001
TYPE 1 360.731 0 654.776 XINC 0.001
TYPE 1 362.088 0 660.62 XINC 0.001
TYPE 1 363.445 0 666.464 XINC 0.001
TYPE 2 343.452 0 642.259 XINC 0.001
TYPE 2 344.809 0 648.104 XINC 0.001
TYPE 2 345.714 0 652.001 XINC 0.001
TYPE 2 347.072 0 657.846 XINC 0.001
TYPE 2 348.429 0 663.691 XINC 0.001
TYPE 2 349.787 0 669.536 XINC 0.001
TYPE 3 329.75 0 645.131 XINC 0.001
TYPE 3 331.108 0 650.978 XINC 0.001
TYPE 3 332.013 0 654.876 XINC 0.001
TYPE 3 333.371 0 660.723 XINC 0.001
TYPE 3 334.728 0 666.569 XINC 0.001
TYPE 3 336.086 0 672.416 XINC 0.001
LOAD GENERATION 1
TYPE 1 360.033 0 638.507 XINC 0.001
TYPE 1 361.408 0 644.347 XINC 0.001
TYPE 1 362.325 0 648.241 XINC 0.001
TYPE 1 363.7 0 654.081 XINC 0.001
TYPE 1 365.075 0 659.921 XINC 0.001
TYPE 1 366.451 0 665.762 XINC 0.001
TYPE 2 346.383 0 641.618 XINC 0.001
TYPE 2 347.758 0 647.459 XINC 0.001
TYPE 2 348.675 0 651.353 XINC 0.001
TYPE 2 350.051 0 657.194 XINC 0.001
TYPE 2 351.426 0 663.034 XINC 0.001
TYPE 2 352.801 0 668.875 XINC 0.001
TYPE 3 332.689 0 644.532 XINC 0.001
TYPE 3 334.065 0 650.375 XINC 0.001
TYPE 3 334.983 0 654.27 XINC 0.001
TYPE 3 336.358 0 660.113 XINC 0.001
TYPE 3 337.734 0 665.955 XINC 0.001

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TYPE 3 339.11 0 671.798 XINC 0.001
LOAD GENERATION 1
TYPE 1 362.952 0 637.815 XINC 0.001
TYPE 1 364.345 0 643.651 XINC 0.001
TYPE 1 365.274 0 647.542 XINC 0.001
TYPE 1 366.667 0 653.378 XINC 0.001
TYPE 1 368.06 0 659.214 XINC 0.001
TYPE 1 369.454 0 665.049 XINC 0.001
TYPE 2 349.311 0 640.968 XINC 0.001
TYPE 2 350.705 0 646.805 XINC 0.001
TYPE 2 351.634 0 650.696 XINC 0.001
TYPE 2 353.027 0 656.532 XINC 0.001
TYPE 2 354.421 0 662.369 XINC 0.001
TYPE 2 355.814 0 668.205 XINC 0.001
TYPE 3 335.627 0 643.924 XINC 0.001
TYPE 3 337.021 0 649.763 XINC 0.001
TYPE 3 337.95 0 653.655 XINC 0.001
TYPE 3 339.344 0 659.493 XINC 0.001
TYPE 3 340.738 0 665.332 XINC 0.001
TYPE 3 342.132 0 671.17 XINC 0.001
LOAD GENERATION 1
TYPE 1 365.868 0 637.114 XINC 0.001
TYPE 1 367.28 0 642.945 XINC 0.001
TYPE 1 368.221 0 646.833 XINC 0.001
TYPE 1 369.632 0 652.665 XINC 0.001
TYPE 1 371.043 0 658.497 XINC 0.001
TYPE 1 372.455 0 664.328 XINC 0.001
TYPE 2 352.238 0 640.309 XINC 0.001
TYPE 2 353.65 0 646.141 XINC 0.001
TYPE 2 354.59 0 650.029 XINC 0.001
TYPE 2 356.002 0 655.861 XINC 0.001
TYPE 2 357.413 0 661.694 XINC 0.001
TYPE 2 358.825 0 667.526 XINC 0.001
TYPE 3 338.563 0 643.307 XINC 0.001
TYPE 3 339.975 0 649.141 XINC 0.001
TYPE 3 340.916 0 653.031 XINC 0.001
TYPE 3 342.328 0 658.865 XINC 0.001
TYPE 3 343.74 0 664.699 XINC 0.001
TYPE 3 345.152 0 670.533 XINC 0.001
LOAD GENERATION 1
TYPE 1 368.783 0 636.404 XINC 0.001
TYPE 1 370.213 0 642.231 XINC 0.001
TYPE 1 371.165 0 646.116 XINC 0.001
TYPE 1 372.595 0 651.943 XINC 0.001
TYPE 1 374.024 0 657.77 XINC 0.001
TYPE 1 375.453 0 663.598 XINC 0.001
TYPE 2 355.163 0 639.641 XINC 0.001
TYPE 2 356.592 0 645.469 XINC 0.001
TYPE 2 357.545 0 649.354 XINC 0.001
TYPE 2 358.975 0 655.182 XINC 0.001
TYPE 2 360.404 0 661.01 XINC 0.001
TYPE 2 361.833 0 666.837 XINC 0.001
TYPE 3 341.497 0 642.681 XINC 0.001
TYPE 3 342.927 0 648.511 XINC 0.001
TYPE 3 343.88 0 652.398 XINC 0.001
TYPE 3 345.31 0 658.227 XINC 0.001
TYPE 3 346.74 0 664.057 XINC 0.001
TYPE 3 348.17 0 669.886 XINC 0.001
LOAD GENERATION 1
TYPE 1 371.696 0 635.684 XINC 0.001
TYPE 1 373.143 0 641.507 XINC 0.001
TYPE 1 374.108 0 645.389 XINC 0.001
TYPE 1 375.555 0 651.212 XINC 0.001
TYPE 1 377.002 0 657.035 XINC 0.001
TYPE 1 378.45 0 662.858 XINC 0.001
TYPE 2 358.085 0 638.964 XINC 0.001
TYPE 2 359.533 0 644.787 XINC 0.001
TYPE 2 360.498 0 648.669 XINC 0.001
TYPE 2 361.945 0 654.493 XINC 0.001
TYPE 2 363.392 0 660.316 XINC 0.001
TYPE 2 364.84 0 666.14 XINC 0.001
TYPE 3 344.429 0 642.046 XINC 0.001
TYPE 3 345.877 0 647.872 XINC 0.001
TYPE 3 346.842 0 651.755 XINC 0.001
TYPE 3 348.29 0 657.58 XINC 0.001
TYPE 3 349.738 0 663.406 XINC 0.001
TYPE 3 351.185 0 669.231 XINC 0.001
LOAD GENERATION 1
TYPE 1 374.606 0 634.956 XINC 0.001

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TYPE 1 376.071 0 640.775 XINC 0.001
TYPE 1 377.048 0 644.654 XINC 0.001
TYPE 1 378.513 0 650.472 XINC 0.001
TYPE 1 379.978 0 656.29 XINC 0.001
TYPE 1 381.444 0 662.109 XINC 0.001
TYPE 2 361.006 0 638.277 XINC 0.001
TYPE 2 362.471 0 644.096 XINC 0.001
TYPE 2 363.448 0 647.976 XINC 0.001
TYPE 2 364.913 0 653.795 XINC 0.001
TYPE 2 366.379 0 659.613 XINC 0.001
TYPE 2 367.844 0 665.432 XINC 0.001
TYPE 3 347.359 0 641.402 XINC 0.001
TYPE 3 348.825 0 647.223 XINC 0.001
TYPE 3 349.802 0 651.104 XINC 0.001
TYPE 3 351.268 0 656.924 XINC 0.001
TYPE 3 352.734 0 662.745 XINC 0.001
TYPE 3 354.199 0 668.566 XINC 0.001
LOAD GENERATION 1
TYPE 1 377.514 0 634.219 XINC 0.001
TYPE 1 378.997 0 640.033 XINC 0.001
TYPE 1 379.986 0 643.909 XINC 0.001
TYPE 1 381.469 0 649.723 XINC 0.001
TYPE 1 382.952 0 655.537 XINC 0.001
TYPE 1 384.435 0 661.35 XINC 0.001
TYPE 2 363.924 0 637.582 XINC 0.001
TYPE 2 365.407 0 643.397 XINC 0.001
TYPE 2 366.396 0 647.273 XINC 0.001
TYPE 2 367.88 0 653.087 XINC 0.001
TYPE 2 369.363 0 658.902 XINC 0.001
TYPE 2 370.846 0 664.716 XINC 0.001
TYPE 3 350.287 0 640.749 XINC 0.001
TYPE 3 351.771 0 646.565 XINC 0.001
TYPE 3 352.76 0 650.443 XINC 0.001
TYPE 3 354.244 0 656.259 XINC 0.001
TYPE 3 355.727 0 662.075 XINC 0.001
TYPE 3 357.211 0 667.891 XINC 0.001
LOAD GENERATION 1
TYPE 1 380.42 0 633.473 XINC 0.001
TYPE 1 381.921 0 639.282 XINC 0.001
TYPE 1 382.922 0 643.155 XINC 0.001
TYPE 1 384.423 0 648.964 XINC 0.001
TYPE 1 385.924 0 654.774 XINC 0.001
TYPE 1 387.425 0 660.583 XINC 0.001
TYPE 2 366.84 0 636.878 XINC 0.001
TYPE 2 368.342 0 642.688 XINC 0.001
TYPE 2 369.342 0 646.561 XINC 0.001
TYPE 2 370.844 0 652.371 XINC 0.001
TYPE 2 372.345 0 658.181 XINC 0.001
TYPE 2 373.846 0 663.99 XINC 0.001
TYPE 3 353.213 0 640.087 XINC 0.001
TYPE 3 354.715 0 645.899 XINC 0.001
TYPE 3 355.716 0 649.773 XINC 0.001
TYPE 3 357.218 0 655.585 XINC 0.001
TYPE 3 358.719 0 661.396 XINC 0.001
TYPE 3 360.221 0 667.208 XINC 0.001
LOAD GENERATION 1
TYPE 1 383.323 0 632.718 XINC 0.001
TYPE 1 384.842 0 638.523 XINC 0.001
TYPE 1 385.855 0 642.392 XINC 0.001
TYPE 1 387.374 0 648.197 XINC 0.001
TYPE 1 388.893 0 654.002 XINC 0.001
TYPE 1 390.412 0 659.806 XINC 0.001
TYPE 2 369.754 0 636.165 XINC 0.001
TYPE 2 371.273 0 641.97 XINC 0.001
TYPE 2 372.286 0 645.84 XINC 0.001
TYPE 2 373.805 0 651.645 XINC 0.001
TYPE 2 375.324 0 657.45 XINC 0.001
TYPE 2 376.844 0 663.255 XINC 0.001
TYPE 3 356.137 0 639.416 XINC 0.001
TYPE 3 357.657 0 645.223 XINC 0.001
TYPE 3 358.67 0 649.094 XINC 0.001
TYPE 3 360.189 0 654.901 XINC 0.001
TYPE 3 361.709 0 660.708 XINC 0.001
TYPE 3 363.228 0 666.515 XINC 0.001
LOAD GENERATION 1
TYPE 1 386.224 0 631.954 XINC 0.001
TYPE 1 387.761 0 637.754 XINC 0.001
TYPE 1 388.786 0 641.621 XINC 0.001
TYPE 1 390.323 0 647.42 XINC 0.001

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TYPE 1 391.86 0 653.22 XINC 0.001
TYPE 1 393.396 0 659.02 XINC 0.001
TYPE 2 372.666 0 635.443 XINC 0.001
TYPE 2 374.203 0 641.243 XINC 0.001
TYPE 2 375.228 0 645.11 XINC 0.001
TYPE 2 376.765 0 650.911 XINC 0.001
TYPE 2 378.302 0 656.711 XINC 0.001
TYPE 2 379.839 0 662.511 XINC 0.001
TYPE 3 359.059 0 638.736 XINC 0.001
TYPE 3 360.596 0 644.538 XINC 0.001
TYPE 3 361.621 0 648.406 XINC 0.001
TYPE 3 363.159 0 654.208 XINC 0.001
TYPE 3 364.696 0 660.01 XINC 0.001
TYPE 3 366.234 0 665.813 XINC 0.001
LOAD GENERATION 1
TYPE 1 389.123 0 631.181 XINC 0.001
TYPE 1 390.678 0 636.976 XINC 0.001
TYPE 1 391.714 0 640.84 XINC 0.001
TYPE 1 393.269 0 646.635 XINC 0.001
TYPE 1 394.824 0 652.43 XINC 0.001
TYPE 1 396.379 0 658.225 XINC 0.001
TYPE 2 375.576 0 634.712 XINC 0.001
TYPE 2 377.131 0 640.507 XINC 0.001
TYPE 2 378.167 0 644.371 XINC 0.001
TYPE 2 379.722 0 650.167 XINC 0.001
TYPE 2 381.277 0 655.962 XINC 0.001
TYPE 2 382.832 0 661.758 XINC 0.001
TYPE 3 361.979 0 638.047 XINC 0.001
TYPE 3 363.534 0 643.844 XINC 0.001
TYPE 3 364.571 0 647.709 XINC 0.001
TYPE 3 366.126 0 653.506 XINC 0.001
TYPE 3 367.682 0 659.304 XINC 0.001
TYPE 3 369.237 0 665.101 XINC 0.001
LOAD GENERATION 1
TYPE 1 392.019 0 630.4 XINC 0.001
TYPE 1 393.592 0 636.19 XINC 0.001
TYPE 1 394.64 0 640.05 XINC 0.001
TYPE 1 396.213 0 645.84 XINC 0.001
TYPE 1 397.786 0 651.63 XINC 0.001
TYPE 1 399.358 0 657.421 XINC 0.001
TYPE 2 378.483 0 633.972 XINC 0.001
TYPE 2 380.056 0 639.762 XINC 0.001
TYPE 2 381.104 0 643.623 XINC 0.001
TYPE 2 382.677 0 649.414 XINC 0.001
TYPE 2 384.25 0 655.205 XINC 0.001
TYPE 2 385.822 0 660.995 XINC 0.001
TYPE 3 364.896 0 637.349 XINC 0.001
TYPE 3 366.47 0 643.141 XINC 0.001
TYPE 3 367.518 0 647.003 XINC 0.001
TYPE 3 369.092 0 652.795 XINC 0.001
TYPE 3 370.665 0 658.588 XINC 0.001
TYPE 3 372.238 0 664.381 XINC 0.001
LOAD GENERATION 1
TYPE 1 394.913 0 629.609 XINC 0.001
TYPE 1 396.504 0 635.394 XINC 0.001
TYPE 1 397.564 0 639.251 XINC 0.001
TYPE 1 399.155 0 645.036 XINC 0.001
TYPE 1 400.745 0 650.822 XINC 0.001
TYPE 1 402.335 0 656.607 XINC 0.001
TYPE 2 381.388 0 633.223 XINC 0.001
TYPE 2 382.979 0 639.009 XINC 0.001
TYPE 2 384.039 0 642.866 XINC 0.001
TYPE 2 385.63 0 648.652 XINC 0.001
TYPE 2 387.22 0 654.438 XINC 0.001
TYPE 2 388.811 0 660.224 XINC 0.001
TYPE 3 367.812 0 636.641 XINC 0.001
TYPE 3 369.403 0 642.429 XINC 0.001
TYPE 3 370.464 0 646.288 XINC 0.001
TYPE 3 372.055 0 652.075 XINC 0.001
TYPE 3 373.646 0 657.863 XINC 0.001
TYPE 3 375.237 0 663.651 XINC 0.001
LOAD GENERATION 1
TYPE 1 397.805 0 628.809 XINC 0.001
TYPE 1 399.413 0 634.59 XINC 0.001
TYPE 1 400.485 0 638.443 XINC 0.001
TYPE 1 402.094 0 644.224 XINC 0.001
TYPE 1 403.702 0 650.004 XINC 0.001
TYPE 1 405.31 0 655.784 XINC 0.001
TYPE 2 384.291 0 632.465 XINC 0.001

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TYPE 2 388.58 0 647.881 XINC 0.001
TYPE 2 390.188 0 653.662 XINC 0.001
TYPE 2 391.797 0 659.443 XINC 0.001
TYPE 3 370.725 0 635.925 XINC 0.001
TYPE 3 372.334 0 641.708 XINC 0.001
TYPE 3 373.407 0 645.563 XINC 0.001
TYPE 3 375.016 0 651.346 XINC 0.001
TYPE 3 376.624 0 657.129 XINC 0.001
TYPE 3 378.233 0 662.911 XINC 0.001
LOAD GENERATION 1
TYPE 1 400.694 0 628 XINC 0.001
TYPE 1 402.32 0 633.776 XINC 0.001
TYPE 1 403.404 0 637.626 XINC 0.001
TYPE 1 405.03 0 643.402 XINC 0.001
TYPE 1 406.656 0 649.177 XINC 0.001
TYPE 1 408.282 0 654.953 XINC 0.001
TYPE 2 387.191 0 631.698 XINC 0.001
TYPE 2 388.817 0 637.474 XINC 0.001
TYPE 2 389.901 0 641.324 XINC 0.001
TYPE 2 391.528 0 647.1 XINC 0.001
TYPE 2 393.154 0 652.876 XINC 0.001
TYPE 2 394.78 0 658.652 XINC 0.001
TYPE 3 373.636 0 635.2 XINC 0.001
TYPE 3 375.263 0 640.978 XINC 0.001
TYPE 3 376.347 0 644.83 XINC 0.001
TYPE 3 377.974 0 650.608 XINC 0.001
TYPE 3 379.601 0 656.385 XINC 0.001
TYPE 3 381.227 0 662.163 XINC 0.001
LOAD GENERATION 1
TYPE 1 403.58 0 627.183 XINC 0.001
TYPE 1 405.224 0 632.953 XINC 0.001
TYPE 1 406.32 0 636.8 XINC 0.001
TYPE 1 407.964 0 642.571 XINC 0.001
TYPE 1 409.608 0 648.341 XINC 0.001
TYPE 1 411.252 0 654.112 XINC 0.001
TYPE 2 390.089 0 630.922 XINC 0.001
TYPE 2 391.733 0 636.693 XINC 0.001
TYPE 2 392.829 0 640.54 XINC 0.001
TYPE 2 394.473 0 646.311 XINC 0.001
TYPE 2 396.117 0 652.082 XINC 0.001
TYPE 2 397.761 0 657.853 XINC 0.001
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TYPE 3 378.19 0 640.239 XINC 0.001
TYPE 3 379.286 0 644.087 XINC 0.001
TYPE 3 380.93 0 649.86 XINC 0.001
TYPE 3 382.575 0 655.633 XINC 0.001
TYPE 3 384.219 0 661.405 XINC 0.001
LOAD GENERATION 1
TYPE 1 406.464 0 626.357 XINC 0.001
TYPE 1 408.126 0 632.122 XINC 0.001
TYPE 1 409.234 0 635.965 XINC 0.001
TYPE 1 410.895 0 641.731 XINC 0.001
TYPE 1 412.557 0 647.496 XINC 0.001
TYPE 1 414.219 0 653.261 XINC 0.001
TYPE 2 392.984 0 630.137 XINC 0.001
TYPE 2 394.646 0 635.903 XINC 0.001
TYPE 2 395.754 0 639.747 XINC 0.001
TYPE 2 397.416 0 645.513 XINC 0.001
TYPE 2 399.078 0 651.279 XINC 0.001
TYPE 2 400.74 0 657.044 XINC 0.001
TYPE 3 379.451 0 633.723 XINC 0.001
TYPE 3 381.114 0 639.491 XINC 0.001
TYPE 3 382.222 0 643.336 XINC 0.001
TYPE 3 383.884 0 649.103 XINC 0.001
TYPE 3 385.547 0 654.871 XINC 0.001
TYPE 3 387.209 0 660.639 XINC 0.001
LOAD GENERATION 1
TYPE 1 409.346 0 625.521 XINC 0.001
TYPE 1 411.025 0 631.281 XINC 0.001
TYPE 1 412.145 0 635.122 XINC 0.001
TYPE 1 413.824 0 640.882 XINC 0.001
TYPE 1 415.504 0 646.642 XINC 0.001
TYPE 1 417.183 0 652.402 XINC 0.001
TYPE 2 395.877 0 629.343 XINC 0.001
TYPE 2 397.557 0 635.104 XINC 0.001
TYPE 2 398.677 0 638.944 XINC 0.001
TYPE 2 400.356 0 644.705 XINC 0.001

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TYPE 2 402.036 0 650.466 XINC 0.001
TYPE 2 403.716 0 656.227 XINC 0.001
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TYPE 3 385.156 0 642.575 XINC 0.001
TYPE 3 386.836 0 648.338 XINC 0.001
TYPE 3 388.516 0 654.1 XINC 0.001
TYPE 3 390.196 0 659.862 XINC 0.001
LOAD GENERATION 1
TYPE 1 412.224 0 624.677 XINC 0.001
TYPE 1 413.922 0 630.432 XINC 0.001
TYPE 1 415.053 0 634.269 XINC 0.001
TYPE 1 416.75 0 640.024 XINC 0.001
TYPE 1 418.447 0 645.779 XINC 0.001
TYPE 1 420.145 0 651.534 XINC 0.001
TYPE 2 398.768 0 628.541 XINC 0.001
TYPE 2 400.465 0 634.296 XINC 0.001
TYPE 2 401.597 0 638.133 XINC 0.001
TYPE 2 403.294 0 643.889 XINC 0.001
TYPE 2 404.992 0 649.644 XINC 0.001
TYPE 2 406.689 0 655.4 XINC 0.001
TYPE 3 385.258 0 632.21 XINC 0.001
TYPE 3 386.955 0 637.967 XINC 0.001
TYPE 3 388.087 0 641.805 XINC 0.001
TYPE 3 389.785 0 647.563 XINC 0.001
TYPE 3 391.483 0 653.32 XINC 0.001
TYPE 3 393.181 0 659.077 XINC 0.001
LOAD GENERATION 1
TYPE 1 415.1 0 623.824 XINC 0.001
TYPE 1 416.815 0 629.574 XINC 0.001
TYPE 1 417.959 0 633.407 XINC 0.001
TYPE 1 419.674 0 639.157 XINC 0.001
TYPE 1 421.389 0 644.906 XINC 0.001
TYPE 1 423.104 0 650.656 XINC 0.001
TYPE 2 401.656 0 627.729 XINC 0.001
TYPE 2 403.371 0 633.479 XINC 0.001
TYPE 2 404.515 0 637.313 XINC 0.001
TYPE 2 406.23 0 643.063 XINC 0.001
TYPE 2 407.945 0 648.813 XINC 0.001
TYPE 2 409.66 0 654.564 XINC 0.001
TYPE 3 388.157 0 631.44 XINC 0.001
TYPE 3 389.873 0 637.192 XINC 0.001
TYPE 3 391.016 0 641.027 XINC 0.001
TYPE 3 392.732 0 646.779 XINC 0.001
TYPE 3 394.448 0 652.531 XINC 0.001
TYPE 3 396.163 0 658.283 XINC 0.001
LOAD GENERATION 1
TYPE 1 417.974 0 622.962 XINC 0.001
TYPE 1 419.707 0 628.707 XINC 0.001
TYPE 1 420.862 0 632.536 XINC 0.001
TYPE 1 422.594 0 638.281 XINC 0.001
TYPE 1 424.327 0 644.025 XINC 0.001
TYPE 1 426.06 0 649.769 XINC 0.001
TYPE 2 404.542 0 626.909 XINC 0.001
TYPE 2 406.275 0 632.653 XINC 0.001
TYPE 2 407.43 0 636.483 XINC 0.001
TYPE 2 409.163 0 642.228 XINC 0.001
TYPE 2 410.896 0 647.973 XINC 0.001
TYPE 2 412.628 0 653.718 XINC 0.001
TYPE 3 391.054 0 630.661 XINC 0.001
TYPE 3 392.788 0 636.408 XINC 0.001
TYPE 3 393.943 0 640.239 XINC 0.001
TYPE 3 395.676 0 645.986 XINC 0.001
TYPE 3 397.41 0 651.732 XINC 0.001
TYPE 3 399.143 0 657.479 XINC 0.001
LOAD GENERATION 1
TYPE 1 420.845 0 622.091 XINC 0.001
TYPE 1 422.595 0 627.83 XINC 0.001
TYPE 1 423.762 0 631.656 XINC 0.001
TYPE 1 425.513 0 637.395 XINC 0.001
TYPE 1 427.263 0 643.134 XINC 0.001
TYPE 1 429.013 0 648.873 XINC 0.001
TYPE 2 407.425 0 626.079 XINC 0.001
TYPE 2 409.175 0 631.819 XINC 0.001
TYPE 2 410.342 0 635.645 XINC 0.001
TYPE 2 412.093 0 641.385 XINC 0.001
TYPE 2 413.844 0 647.124 XINC 0.001
TYPE 2 415.594 0 652.864 XINC 0.001
TYPE 3 393.949 0 629.873 XINC 0.001

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TYPE 3 395.7 0 635.615 XINC 0.001
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TYPE 3 402.12 0 656.666 XINC 0.001
LOAD GENERATION 1
TYPE 1 423.713 0 621.212 XINC 0.001
TYPE 1 425.481 0 626.945 XINC 0.001
TYPE 1 426.66 0 630.768 XINC 0.001
TYPE 1 428.428 0 636.501 XINC 0.001
TYPE 1 430.196 0 642.235 XINC 0.001
TYPE 1 431.964 0 647.969 XINC 0.001
TYPE 2 410.305 0 625.241 XINC 0.001
TYPE 2 412.074 0 630.975 XINC 0.001
TYPE 2 413.252 0 634.798 XINC 0.001
TYPE 2 415.021 0 640.532 XINC 0.001
TYPE 2 416.789 0 646.266 XINC 0.001
TYPE 2 418.557 0 652 XINC 0.001
TYPE 3 396.841 0 629.077 XINC 0.001
TYPE 3 398.61 0 634.813 XINC 0.001
TYPE 3 399.789 0 638.637 XINC 0.001
TYPE 3 401.558 0 644.372 XINC 0.001
TYPE 3 403.327 0 650.108 XINC 0.001
TYPE 3 405.095 0 655.844 XINC 0.001
LOAD GENERATION 1
TYPE 1 426.578 0 620.323 XINC 0.001
TYPE 1 428.364 0 626.051 XINC 0.001
TYPE 1 429.555 0 629.87 XINC 0.001
TYPE 1 431.34 0 635.598 XINC 0.001
TYPE 1 433.126 0 641.326 XINC 0.001
TYPE 1 434.912 0 647.055 XINC 0.001
TYPE 2 413.183 0 624.394 XINC 0.001
TYPE 2 414.969 0 630.122 XINC 0.001
TYPE 2 416.16 0 633.942 XINC 0.001
TYPE 2 417.946 0 639.67 XINC 0.001
TYPE 2 419.732 0 645.399 XINC 0.001
TYPE 2 421.518 0 651.128 XINC 0.001
TYPE 3 399.731 0 628.271 XINC 0.001
TYPE 3 401.517 0 634.001 XINC 0.001
TYPE 3 402.708 0 637.822 XINC 0.001
TYPE 3 404.495 0 643.552 XINC 0.001
TYPE 3 406.281 0 649.283 XINC 0.001
TYPE 3 408.068 0 655.013 XINC 0.001
LOAD GENERATION 1
TYPE 1 429.441 0 619.426 XINC 0.001
TYPE 1 431.244 0 625.149 XINC 0.001
TYPE 1 432.447 0 628.964 XINC 0.001
TYPE 1 434.25 0 634.686 XINC 0.001
TYPE 1 436.054 0 640.409 XINC 0.001
TYPE 1 437.857 0 646.131 XINC 0.001
TYPE 2 416.059 0 623.538 XINC 0.001
TYPE 2 417.862 0 629.261 XINC 0.001
TYPE 2 419.065 0 633.076 XINC 0.001
TYPE 2 420.868 0 638.799 XINC 0.001
TYPE 2 422.672 0 644.523 XINC 0.001
TYPE 2 424.475 0 650.246 XINC 0.001
TYPE 3 402.618 0 627.456 XINC 0.001
TYPE 3 404.422 0 633.181 XINC 0.001
TYPE 3 405.625 0 636.998 XINC 0.001
TYPE 3 407.429 0 642.723 XINC 0.001
TYPE 3 409.233 0 648.448 XINC 0.001
TYPE 3 411.037 0 654.173 XINC 0.001
LOAD GENERATION 1
TYPE 1 432.301 0 618.52 XINC 0.001
TYPE 1 434.122 0 624.237 XINC 0.001
TYPE 1 435.336 0 628.048 XINC 0.001
TYPE 1 437.157 0 633.765 XINC 0.001
TYPE 1 438.978 0 639.482 XINC 0.001
TYPE 1 440.799 0 645.199 XINC 0.001
TYPE 2 418.931 0 622.673 XINC 0.001
TYPE 2 420.752 0 628.391 XINC 0.001
TYPE 2 421.967 0 632.202 XINC 0.001
TYPE 2 423.788 0 637.92 XINC 0.001
TYPE 2 425.609 0 643.637 XINC 0.001
TYPE 2 427.43 0 649.355 XINC 0.001
TYPE 3 405.503 0 626.633 XINC 0.001
TYPE 3 407.325 0 632.352 XINC 0.001
TYPE 3 408.539 0 636.165 XINC 0.001
TYPE 3 410.361 0 641.885 XINC 0.001

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TYPE 3 412.183 0 647.604 XINC 0.001
TYPE 3 414.005 0 653.323 XINC 0.001
LOAD GENERATION 1
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TYPE 1 436.997 0 623.316 XINC 0.001
TYPE 1 438.222 0 627.124 XINC 0.001
TYPE 1 440.061 0 632.835 XINC 0.001
TYPE 1 441.9 0 638.547 XINC 0.001
TYPE 1 443.738 0 644.258 XINC 0.001
TYPE 2 421.801 0 621.799 XINC 0.001
TYPE 2 423.64 0 627.511 XINC 0.001
TYPE 2 424.866 0 631.319 XINC 0.001
TYPE 2 426.705 0 637.031 XINC 0.001
TYPE 2 428.544 0 642.743 XINC 0.001
TYPE 2 430.382 0 648.455 XINC 0.001
TYPE 3 408.385 0 625.801 XINC 0.001
TYPE 3 410.225 0 631.514 XINC 0.001
TYPE 3 411.451 0 635.324 XINC 0.001
TYPE 3 413.29 0 641.037 XINC 0.001
TYPE 3 415.13 0 646.751 XINC 0.001
TYPE 3 416.969 0 652.464 XINC 0.001
LOAD GENERATION 1
TYPE 1 438.012 0 616.681 XINC 0.001
TYPE 1 439.869 0 622.387 XINC 0.001
TYPE 1 441.106 0 626.191 XINC 0.001
TYPE 1 442.962 0 631.896 XINC 0.001
TYPE 1 444.819 0 637.602 XINC 0.001
TYPE 1 446.675 0 643.308 XINC 0.001
TYPE 2 424.668 0 620.917 XINC 0.001
TYPE 2 426.525 0 626.623 XINC 0.001
TYPE 2 427.763 0 630.427 XINC 0.001
TYPE 2 429.619 0 636.133 XINC 0.001
TYPE 2 431.475 0 641.839 XINC 0.001
TYPE 2 433.332 0 647.546 XINC 0.001
TYPE 3 411.265 0 624.96 XINC 0.001
TYPE 3 413.122 0 630.667 XINC 0.001
TYPE 3 414.36 0 634.473 XINC 0.001
TYPE 3 416.217 0 640.181 XINC 0.001
TYPE 3 418.074 0 645.889 XINC 0.001
TYPE 3 419.931 0 651.597 XINC 0.001
LOAD GENERATION 1
TYPE 1 440.864 0 615.749 XINC 0.001
TYPE 1 442.738 0 621.449 XINC 0.001
TYPE 1 443.987 0 625.249 XINC 0.001
TYPE 1 445.861 0 630.948 XINC 0.001
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TYPE 1 449.608 0 642.348 XINC 0.001
TYPE 2 427.533 0 620.025 XINC 0.001
TYPE 2 429.407 0 625.726 XINC 0.001
TYPE 2 430.656 0 629.526 XINC 0.001
TYPE 2 432.53 0 635.226 XINC 0.001
TYPE 2 434.404 0 640.927 XINC 0.001
TYPE 2 436.278 0 646.627 XINC 0.001
TYPE 3 414.142 0 624.109 XINC 0.001
TYPE 3 416.017 0 629.812 XINC 0.001
TYPE 3 417.266 0 633.613 XINC 0.001
TYPE 3 419.141 0 639.315 XINC 0.001
TYPE 3 421.015 0 645.017 XINC 0.001
TYPE 3 422.89 0 650.72 XINC 0.001
LOAD GENERATION 1
TYPE 1 443.712 0 614.807 XINC 0.001
TYPE 1 445.604 0 620.502 XINC 0.001
TYPE 1 446.865 0 624.298 XINC 0.001
TYPE 1 448.756 0 629.992 XINC 0.001
TYPE 1 450.647 0 635.686 XINC 0.001
TYPE 1 452.539 0 641.38 XINC 0.001
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TYPE 2 432.286 0 624.82 XINC 0.001
TYPE 2 433.547 0 628.616 XINC 0.001
TYPE 2 435.439 0 634.311 XINC 0.001
TYPE 2 437.331 0 640.005 XINC 0.001
TYPE 2 439.222 0 645.7 XINC 0.001
TYPE 3 417.016 0 623.25 XINC 0.001
TYPE 3 418.909 0 628.947 XINC 0.001
TYPE 3 420.17 0 632.745 XINC 0.001
TYPE 3 422.062 0 638.441 XINC 0.001
TYPE 3 423.954 0 644.137 XINC 0.001
TYPE 3 425.846 0 649.834 XINC 0.001
LOAD GENERATION 1

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TYPE 1 446.558 0 613.857 XINC 0.001
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TYPE 1 451.648 0 629.026 XINC 0.001
TYPE 1 453.557 0 634.714 XINC 0.001
TYPE 1 455.466 0 640.402 XINC 0.001
TYPE 2 433.254 0 618.216 XINC 0.001
TYPE 2 435.163 0 623.905 XINC 0.001
TYPE 2 436.436 0 627.697 XINC 0.001
TYPE 2 438.345 0 633.386 XINC 0.001
TYPE 2 440.254 0 639.075 XINC 0.001
TYPE 2 442.163 0 644.764 XINC 0.001
TYPE 3 419.888 0 622.383 XINC 0.001
TYPE 3 421.798 0 628.073 XINC 0.001
TYPE 3 423.071 0 631.867 XINC 0.001
TYPE 3 424.981 0 637.557 XINC 0.001
TYPE 3 426.89 0 643.248 XINC 0.001
TYPE 3 428.8 0 648.938 XINC 0.001
LOAD GENERATION 1
TYPE 1 449.4 0 612.899 XINC 0.001
TYPE 1 451.327 0 618.581 XINC 0.001
TYPE 1 452.611 0 622.369 XINC 0.001
TYPE 1 454.538 0 628.051 XINC 0.001
TYPE 1 456.464 0 633.734 XINC 0.001
TYPE 1 458.391 0 639.416 XINC 0.001
TYPE 2 436.11 0 617.298 XINC 0.001
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TYPE 2 439.321 0 626.77 XINC 0.001
TYPE 2 441.248 0 632.452 XINC 0.001
TYPE 2 443.174 0 638.135 XINC 0.001
TYPE 2 445.101 0 643.818 XINC 0.001
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TYPE 3 424.684 0 627.191 XINC 0.001
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TYPE 3 427.897 0 636.665 XINC 0.001
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LOAD GENERATION 1
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TYPE 1 454.184 0 617.607 XINC 0.001
TYPE 1 455.48 0 621.391 XINC 0.001
TYPE 1 457.424 0 627.068 XINC 0.001
TYPE 1 459.368 0 632.744 XINC 0.001
TYPE 1 461.312 0 638.42 XINC 0.001
TYPE 2 438.963 0 616.371 XINC 0.001
TYPE 2 440.907 0 622.048 XINC 0.001
TYPE 2 442.203 0 625.833 XINC 0.001
TYPE 2 444.148 0 631.51 XINC 0.001
TYPE 2 446.092 0 637.187 XINC 0.001
TYPE 2 448.036 0 642.864 XINC 0.001
TYPE 3 425.624 0 620.62 XINC 0.001
TYPE 3 427.568 0 626.299 XINC 0.001
TYPE 3 428.865 0 630.085 XINC 0.001
TYPE 3 430.81 0 635.764 XINC 0.001
TYPE 3 432.754 0 641.442 XINC 0.001
TYPE 3 434.699 0 647.121 XINC 0.001
LOAD GENERATION 1
TYPE 1 455.077 0 610.955 XINC 0.001
TYPE 1 457.038 0 616.625 XINC 0.001
TYPE 1 458.346 0 620.405 XINC 0.001
TYPE 1 460.307 0 626.075 XINC 0.001
TYPE 1 462.269 0 631.746 XINC 0.001
TYPE 1 464.23 0 637.416 XINC 0.001
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TYPE 2 443.775 0 621.107 XINC 0.001
TYPE 2 445.083 0 624.888 XINC 0.001
TYPE 2 447.045 0 630.558 XINC 0.001
TYPE 2 449.006 0 636.229 XINC 0.001
TYPE 2 450.968 0 641.9 XINC 0.001
TYPE 3 428.487 0 619.726 XINC 0.001
TYPE 3 430.449 0 625.399 XINC 0.001
TYPE 3 431.758 0 629.181 XINC 0.001
TYPE 3 433.72 0 634.853 XINC 0.001
TYPE 3 435.682 0 640.526 XINC 0.001
TYPE 3 437.644 0 646.198 XINC 0.001
LOAD GENERATION 1
TYPE 1 457.91 0 609.969 XINC 0.001
TYPE 1 459.889 0 615.634 XINC 0.001
TYPE 1 461.209 0 619.41 XINC 0.001

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TYPE 1 465.167 0 630.738 XINC 0.001
TYPE 1 467.146 0 636.403 XINC 0.001
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TYPE 2 446.64 0 620.157 XINC 0.001
TYPE 2 447.96 0 623.933 XINC 0.001
TYPE 2 449.939 0 629.598 XINC 0.001
TYPE 2 451.918 0 635.263 XINC 0.001
TYPE 2 453.897 0 640.928 XINC 0.001
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TYPE 3 433.328 0 624.49 XINC 0.001
TYPE 3 434.648 0 628.267 XINC 0.001
TYPE 3 436.627 0 633.934 XINC 0.001
TYPE 3 438.607 0 639.6 XINC 0.001
TYPE 3 440.587 0 645.267 XINC 0.001
LOAD GENERATION 1
TYPE 1 460.741 0 608.976 XINC 0.001
TYPE 1 462.737 0 614.634 XINC 0.001
TYPE 1 464.068 0 618.406 XINC 0.001
TYPE 1 466.065 0 624.064 XINC 0.001
TYPE 1 468.061 0 629.722 XINC 0.001
TYPE 1 470.058 0 635.38 XINC 0.001
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TYPE 2 449.502 0 619.197 XINC 0.001
TYPE 2 450.833 0 622.97 XINC 0.001
TYPE 2 452.83 0 628.629 XINC 0.001
TYPE 2 454.827 0 634.287 XINC 0.001
TYPE 2 456.823 0 639.946 XINC 0.001
TYPE 3 434.206 0 617.911 XINC 0.001
TYPE 3 436.203 0 623.571 XINC 0.001
TYPE 3 437.535 0 627.345 XINC 0.001
TYPE 3 439.532 0 633.005 XINC 0.001
TYPE 3 441.529 0 638.666 XINC 0.001
TYPE 3 443.526 0 644.326 XINC 0.001
LOAD GENERATION 1
TYPE 1 463.568 0 607.973 XINC 0.001
TYPE 1 465.582 0 613.625 XINC 0.001
TYPE 1 466.925 0 617.393 XINC 0.001
TYPE 1 468.939 0 623.045 XINC 0.001
TYPE 1 470.953 0 628.697 XINC 0.001
TYPE 1 472.967 0 634.349 XINC 0.001
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TYPE 2 452.361 0 618.229 XINC 0.001
TYPE 2 453.704 0 621.998 XINC 0.001
TYPE 2 455.718 0 627.65 XINC 0.001
TYPE 2 457.732 0 633.303 XINC 0.001
TYPE 2 459.746 0 638.955 XINC 0.001
TYPE 3 437.061 0 616.99 XINC 0.001
TYPE 3 439.076 0 622.644 XINC 0.001
TYPE 3 440.419 0 626.414 XINC 0.001
TYPE 3 442.434 0 632.068 XINC 0.001
TYPE 3 444.448 0 637.722 XINC 0.001
TYPE 3 446.463 0 643.377 XINC 0.001
LOAD GENERATION 1
TYPE 1 466.393 0 606.962 XINC 0.001
TYPE 1 468.424 0 612.607 XINC 0.001
TYPE 1 469.778 0 616.371 XINC 0.001
TYPE 1 471.81 0 622.017 XINC 0.001
TYPE 1 473.841 0 627.663 XINC 0.001
TYPE 1 475.872 0 633.308 XINC 0.001
TYPE 2 453.186 0 611.606 XINC 0.001
TYPE 2 455.217 0 617.253 XINC 0.001
TYPE 2 456.572 0 621.017 XINC 0.001
TYPE 2 458.603 0 626.663 XINC 0.001
TYPE 2 460.635 0 632.309 XINC 0.001
TYPE 2 462.666 0 637.956 XINC 0.001
TYPE 3 439.914 0 616.061 XINC 0.001
TYPE 3 441.946 0 621.709 XINC 0.001
TYPE 3 443.3 0 625.474 XINC 0.001
TYPE 3 445.332 0 631.122 XINC 0.001
TYPE 3 447.364 0 636.77 XINC 0.001
TYPE 3 449.397 0 642.418 XINC 0.001
LOAD GENERATION 1
TYPE 1 469.214 0 605.942 XINC 0.001
TYPE 1 471.263 0 611.581 XINC 0.001
TYPE 1 472.629 0 615.341 XINC 0.001
TYPE 1 474.677 0 620.98 XINC 0.001
TYPE 1 476.726 0 626.62 XINC 0.001
TYPE 1 478.775 0 632.259 XINC 0.001

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TYPE 2 463.534 0 631.307 XINC 0.001
TYPE 2 465.583 0 636.947 XINC 0.001
TYPE 3 442.763 0 615.122 XINC 0.001
TYPE 3 444.813 0 620.764 XINC 0.001
TYPE 3 446.179 0 624.525 XINC 0.001
TYPE 3 448.228 0 630.167 XINC 0.001
TYPE 3 450.278 0 635.808 XINC 0.001
TYPE 3 452.327 0 641.45 XINC 0.001
LOAD GENERATION 1
TYPE 1 472.032 0 604.913 XINC 0.001
TYPE 1 474.098 0 610.546 XINC 0.001
TYPE 1 475.476 0 614.301 XINC 0.001
TYPE 1 477.542 0 619.934 XINC 0.001
TYPE 1 479.608 0 625.568 XINC 0.001
TYPE 1 481.674 0 631.201 XINC 0.001
TYPE 2 458.854 0 609.639 XINC 0.001
TYPE 2 460.92 0 615.273 XINC 0.001
TYPE 2 462.298 0 619.028 XINC 0.001
TYPE 2 464.364 0 624.662 XINC 0.001
TYPE 2 466.431 0 630.296 XINC 0.001
TYPE 2 468.497 0 635.929 XINC 0.001
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TYPE 3 447.676 0 619.81 XINC 0.001
TYPE 3 449.054 0 623.567 XINC 0.001
TYPE 3 451.121 0 629.203 XINC 0.001
TYPE 3 453.188 0 634.838 XINC 0.001
TYPE 3 455.255 0 640.473 XINC 0.001
LOAD GENERATION 1
TYPE 1 474.847 0 603.876 XINC 0.001
TYPE 1 476.931 0 609.502 XINC 0.001
TYPE 1 478.32 0 613.253 XINC 0.001
TYPE 1 480.403 0 618.88 XINC 0.001
TYPE 1 482.486 0 624.507 XINC 0.001
TYPE 1 484.57 0 630.133 XINC 0.001
TYPE 2 461.684 0 608.642 XINC 0.001
TYPE 2 463.767 0 614.27 XINC 0.001
TYPE 2 465.157 0 618.021 XINC 0.001
TYPE 2 467.24 0 623.648 XINC 0.001
TYPE 2 469.324 0 629.276 XINC 0.001
TYPE 2 471.407 0 634.903 XINC 0.001
TYPE 3 448.453 0 613.219 XINC 0.001
TYPE 3 450.537 0 618.848 XINC 0.001
TYPE 3 451.927 0 622.601 XINC 0.001
TYPE 3 454.011 0 628.23 XINC 0.001
TYPE 3 456.095 0 633.859 XINC 0.001
TYPE 3 458.18 0 639.487 XINC 0.001
LOAD GENERATION 1
TYPE 1 477.659 0 602.83 XINC 0.001
TYPE 1 479.76 0 608.45 XINC 0.001
TYPE 1 481.16 0 612.197 XINC 0.001
TYPE 1 483.261 0 617.817 XINC 0.001
TYPE 1 485.362 0 623.437 XINC 0.001
TYPE 1 487.463 0 629.057 XINC 0.001
TYPE 2 464.51 0 607.637 XINC 0.001
TYPE 2 466.611 0 613.258 XINC 0.001
TYPE 2 468.012 0 617.005 XINC 0.001
TYPE 2 470.113 0 622.626 XINC 0.001
TYPE 2 472.214 0 628.246 XINC 0.001
TYPE 2 474.315 0 633.867 XINC 0.001
TYPE 3 451.294 0 612.254 XINC 0.001
TYPE 3 453.395 0 617.877 XINC 0.001
TYPE 3 454.796 0 621.625 XINC 0.001
TYPE 3 456.898 0 627.248 XINC 0.001
TYPE 3 459 0 632.87 XINC 0.001
TYPE 3 461.101 0 638.493 XINC 0.001
LOAD GENERATION 1
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TYPE 1 482.586 0 607.389 XINC 0.001
TYPE 1 483.998 0 611.131 XINC 0.001
TYPE 1 486.116 0 616.745 XINC 0.001
TYPE 1 488.234 0 622.358 XINC 0.001
TYPE 1 490.352 0 627.972 XINC 0.001
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TYPE 2 470.864 0 615.98 XINC 0.001

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TYPE 2 472.982 0 621.594 XINC 0.001
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TYPE 3 454.132 0 611.281 XINC 0.001
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TYPE 3 457.663 0 620.641 XINC 0.001
TYPE 3 459.782 0 626.257 XINC 0.001
TYPE 3 461.901 0 631.873 XINC 0.001
TYPE 3 464.02 0 637.489 XINC 0.001
LOAD GENERATION 1
TYPE 1 483.273 0 600.712 XINC 0.001
TYPE 1 485.408 0 606.319 XINC 0.001
TYPE 1 486.832 0 610.057 XINC 0.001
TYPE 1 488.967 0 615.664 XINC 0.001
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TYPE 2 472.289 0 611.207 XINC 0.001
TYPE 2 473.713 0 614.946 XINC 0.001
TYPE 2 475.849 0 620.554 XINC 0.001
TYPE 2 477.984 0 626.161 XINC 0.001
TYPE 2 480.12 0 631.769 XINC 0.001
TYPE 3 456.966 0 610.299 XINC 0.001
TYPE 3 459.102 0 615.908 XINC 0.001
TYPE 3 460.527 0 619.648 XINC 0.001
TYPE 3 462.663 0 625.257 XINC 0.001
TYPE 3 464.799 0 630.867 XINC 0.001
TYPE 3 466.935 0 636.476 XINC 0.001
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TYPE 1 496.12 0 625.775 XINC 0.001
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TYPE 2 476.559 0 613.903 XINC 0.001
TYPE 2 478.712 0 619.504 XINC 0.001
TYPE 2 480.865 0 625.106 XINC 0.001
TYPE 2 483.018 0 630.707 XINC 0.001
TYPE 3 459.798 0 609.308 XINC 0.001
TYPE 3 461.951 0 614.911 XINC 0.001
TYPE 3 463.387 0 618.646 XINC 0.001
TYPE 3 465.54 0 624.249 XINC 0.001
TYPE 3 467.694 0 629.851 XINC 0.001
TYPE 3 469.847 0 635.454 XINC 0.001
LOAD GENERATION 1
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TYPE 1 496.83 0 619.07 XINC 0.001
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TYPE 2 477.955 0 609.122 XINC 0.001
TYPE 2 479.402 0 612.852 XINC 0.001
TYPE 2 481.572 0 618.446 XINC 0.001
TYPE 2 483.742 0 624.041 XINC 0.001
TYPE 2 485.912 0 629.635 XINC 0.001
TYPE 3 462.626 0 608.308 XINC 0.001
TYPE 3 464.797 0 613.904 XINC 0.001
TYPE 3 466.244 0 617.635 XINC 0.001
TYPE 3 468.415 0 623.231 XINC 0.001
TYPE 3 470.586 0 628.827 XINC 0.001
TYPE 3 472.757 0 634.423 XINC 0.001
LOAD GENERATION 1
TYPE 1 491.668 0 597.47 XINC 0.001
TYPE 1 493.856 0 603.057 XINC 0.001
TYPE 1 495.314 0 606.781 XINC 0.001
TYPE 1 497.501 0 612.369 XINC 0.001
TYPE 1 499.688 0 617.956 XINC 0.001
TYPE 1 501.875 0 623.543 XINC 0.001
TYPE 2 478.595 0 602.479 XINC 0.001
TYPE 2 480.783 0 608.067 XINC 0.001
TYPE 2 482.241 0 611.792 XINC 0.001
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TYPE 2 486.616 0 622.967 XINC 0.001
TYPE 2 488.803 0 628.555 XINC 0.001

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TYPE 3 473.474 0 627.794 XINC 0.001
TYPE 3 475.662 0 633.384 XINC 0.001
LOAD GENERATION 1
TYPE 1 494.46 0 596.372 XINC 0.001
TYPE 1 496.665 0 601.952 XINC 0.001
TYPE 1 498.134 0 605.672 XINC 0.001
TYPE 1 500.339 0 611.253 XINC 0.001
TYPE 1 502.543 0 616.833 XINC 0.001
TYPE 1 504.747 0 622.413 XINC 0.001
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TYPE 2 483.607 0 607.002 XINC 0.001
TYPE 2 485.077 0 610.723 XINC 0.001
TYPE 2 487.282 0 616.304 XINC 0.001
TYPE 2 489.486 0 621.885 XINC 0.001
TYPE 2 491.691 0 627.466 XINC 0.001
TYPE 3 468.274 0 606.283 XINC 0.001
TYPE 3 470.479 0 611.865 XINC 0.001
TYPE 3 471.95 0 615.587 XINC 0.001
TYPE 3 474.155 0 621.17 XINC 0.001
TYPE 3 476.36 0 626.752 XINC 0.001
TYPE 3 478.565 0 632.335 XINC 0.001
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TYPE 1 507.616 0 621.275 XINC 0.001
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TYPE 2 486.429 0 605.929 XINC 0.001
TYPE 2 487.91 0 609.645 XINC 0.001
TYPE 2 490.132 0 615.219 XINC 0.001
TYPE 2 492.354 0 620.794 XINC 0.001
TYPE 2 494.575 0 626.368 XINC 0.001
TYPE 3 471.093 0 605.257 XINC 0.001
TYPE 3 473.316 0 610.833 XINC 0.001
TYPE 3 474.797 0 614.55 XINC 0.001
TYPE 3 477.02 0 620.126 XINC 0.001
TYPE 3 479.242 0 625.702 XINC 0.001
TYPE 3 481.465 0 631.277 XINC 0.001
LOAD GENERATION 1
TYPE 1 500.034 0 594.15 XINC 0.001
TYPE 1 502.273 0 599.717 XINC 0.001
TYPE 1 503.765 0 603.428 XINC 0.001
TYPE 1 506.004 0 608.995 XINC 0.001
TYPE 1 508.243 0 614.561 XINC 0.001
TYPE 1 510.481 0 620.128 XINC 0.001
TYPE 2 487.008 0 599.28 XINC 0.001
TYPE 2 489.247 0 604.847 XINC 0.001
TYPE 2 490.739 0 608.559 XINC 0.001
TYPE 2 492.978 0 614.126 XINC 0.001
TYPE 2 495.217 0 619.693 XINC 0.001
TYPE 2 497.456 0 625.261 XINC 0.001
TYPE 3 473.909 0 604.222 XINC 0.001
TYPE 3 476.149 0 609.791 XINC 0.001
TYPE 3 477.642 0 613.504 XINC 0.001
TYPE 3 479.882 0 619.073 XINC 0.001
TYPE 3 482.121 0 624.642 XINC 0.001
TYPE 3 484.361 0 630.211 XINC 0.001
LOAD GENERATION 1
TYPE 1 502.815 0 593.026 XINC 0.001
TYPE 1 505.071 0 598.586 XINC 0.001
TYPE 1 506.575 0 602.293 XINC 0.001
TYPE 1 508.831 0 607.852 XINC 0.001
TYPE 1 511.087 0 613.412 XINC 0.001
TYPE 1 513.343 0 618.972 XINC 0.001
TYPE 2 489.805 0 598.197 XINC 0.001
TYPE 2 492.061 0 603.757 XINC 0.001
TYPE 2 493.566 0 607.464 XINC 0.001
TYPE 2 495.822 0 613.024 XINC 0.001
TYPE 2 498.078 0 618.584 XINC 0.001
TYPE 2 500.334 0 624.145 XINC 0.001
TYPE 3 476.722 0 603.179 XINC 0.001
TYPE 3 478.979 0 608.741 XINC 0.001
TYPE 3 480.483 0 612.449 XINC 0.001

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TYPE 3 482.74 0 618.011 XINC 0.001
TYPE 3 484.997 0 623.573 XINC 0.001
TYPE 3 487.254 0 629.135 XINC 0.001
LOAD GENERATION 1
TYPE 1 505.594 0 591.894 XINC 0.001
TYPE 1 507.867 0 597.447 XINC 0.001
TYPE 1 509.382 0 601.149 XINC 0.001
TYPE 1 511.655 0 606.701 XINC 0.001
TYPE 1 513.928 0 612.254 XINC 0.001
TYPE 1 516.201 0 617.807 XINC 0.001
TYPE 2 492.599 0 597.104 XINC 0.001
TYPE 2 494.873 0 602.658 XINC 0.001
TYPE 2 496.388 0 606.36 XINC 0.001
TYPE 2 498.661 0 611.913 XINC 0.001
TYPE 2 500.935 0 617.467 XINC 0.001
TYPE 2 503.208 0 623.02 XINC 0.001
TYPE 3 479.532 0 602.127 XINC 0.001
TYPE 3 481.806 0 607.682 XINC 0.001
TYPE 3 483.321 0 611.386 XINC 0.001
TYPE 3 485.595 0 616.941 XINC 0.001
TYPE 3 487.869 0 622.496 XINC 0.001
TYPE 3 490.143 0 628.051 XINC 0.001
LOAD GENERATION 1
TYPE 1 508.368 0 590.753 XINC 0.001
TYPE 1 510.658 0 596.299 XINC 0.001
TYPE 1 512.185 0 599.996 XINC 0.001
TYPE 1 514.475 0 605.542 XINC 0.001
TYPE 1 516.766 0 611.088 XINC 0.001
TYPE 1 519.056 0 616.633 XINC 0.001
TYPE 2 495.39 0 596.004 XINC 0.001
TYPE 2 497.681 0 601.55 XINC 0.001
TYPE 2 499.207 0 605.248 XINC 0.001
TYPE 2 501.498 0 610.794 XINC 0.001
TYPE 2 503.788 0 616.34 XINC 0.001
TYPE 2 506.079 0 621.886 XINC 0.001
TYPE 3 482.338 0 601.067 XINC 0.001
TYPE 3 484.629 0 606.615 XINC 0.001
TYPE 3 486.156 0 610.314 XINC 0.001
TYPE 3 488.447 0 615.862 XINC 0.001
TYPE 3 490.738 0 621.41 XINC 0.001
TYPE 3 493.029 0 626.957 XINC 0.001
LOAD GENERATION 1
TYPE 1 511.139 0 589.604 XINC 0.001
TYPE 1 513.447 0 595.143 XINC 0.001
TYPE 1 514.985 0 598.835 XINC 0.001
TYPE 1 517.292 0 604.374 XINC 0.001
TYPE 1 519.599 0 609.912 XINC 0.001
TYPE 1 521.906 0 615.451 XINC 0.001
TYPE 2 498.178 0 594.894 XINC 0.001
TYPE 2 500.485 0 600.434 XINC 0.001
TYPE 2 502.023 0 604.126 XINC 0.001
TYPE 2 504.331 0 609.666 XINC 0.001
TYPE 2 506.638 0 615.205 XINC 0.001
TYPE 2 508.946 0 620.744 XINC 0.001
TYPE 3 485.141 0 599.998 XINC 0.001
TYPE 3 487.449 0 605.539 XINC 0.001
TYPE 3 488.988 0 609.233 XINC 0.001
TYPE 3 491.296 0 614.774 XINC 0.001
TYPE 3 493.604 0 620.314 XINC 0.001
TYPE 3 495.912 0 625.855 XINC 0.001
LOAD GENERATION 1
TYPE 1 513.907 0 588.446 XINC 0.001
TYPE 1 516.231 0 593.978 XINC 0.001
TYPE 1 517.781 0 597.665 XINC 0.001
TYPE 1 520.105 0 603.197 XINC 0.001
TYPE 1 522.429 0 608.728 XINC 0.001
TYPE 1 524.754 0 614.26 XINC 0.001
TYPE 2 500.961 0 593.776 XINC 0.001
TYPE 2 503.286 0 599.309 XINC 0.001
TYPE 2 504.836 0 602.997 XINC 0.001
TYPE 2 507.16 0 608.529 XINC 0.001
TYPE 2 509.485 0 614.061 XINC 0.001
TYPE 2 511.809 0 619.593 XINC 0.001
TYPE 3 487.941 0 598.92 XINC 0.001
TYPE 3 490.266 0 604.454 XINC 0.001
TYPE 3 491.816 0 608.143 XINC 0.001
TYPE 3 494.141 0 613.677 XINC 0.001
TYPE 3 496.466 0 619.21 XINC 0.001
TYPE 3 498.792 0 624.744 XINC 0.001

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LOAD GENERATION 1  
 TYPE 1 516.671 0 587.28 XINC 0.001  
 TYPE 1 519.012 0 592.804 XINC 0.001  
 TYPE 1 520.573 0 596.487 XINC 0.001  
 TYPE 1 522.914 0 602.011 XINC 0.001  
 TYPE 1 525.256 0 607.535 XINC 0.001  
 TYPE 1 527.597 0 613.06 XINC 0.001  
 TYPE 2 503.742 0 592.65 XINC 0.001  
 TYPE 2 506.083 0 598.175 XINC 0.001  
 TYPE 2 507.645 0 601.858 XINC 0.001  
 TYPE 2 509.986 0 607.383 XINC 0.001  
 TYPE 2 512.328 0 612.908 XINC 0.001  
 TYPE 2 514.669 0 618.433 XINC 0.001  
 TYPE 3 490.737 0 597.834 XINC 0.001  
 TYPE 3 493.079 0 603.36 XINC 0.001  
 TYPE 3 494.641 0 607.045 XINC 0.001  
 TYPE 3 496.983 0 612.571 XINC 0.001  
 TYPE 3 499.325 0 618.098 XINC 0.001  
 TYPE 3 501.668 0 623.624 XINC 0.001

LOAD GENERATION 1  
 TYPE 1 519.431 0 586.105 XINC 0.001  
 TYPE 1 521.79 0 591.622 XINC 0.001  
 TYPE 1 523.362 0 595.3 XINC 0.001  
 TYPE 1 525.72 0 600.817 XINC 0.001  
 TYPE 1 528.079 0 606.334 XINC 0.001  
 TYPE 1 530.437 0 611.851 XINC 0.001  
 TYPE 2 506.519 0 591.515 XINC 0.001  
 TYPE 2 508.877 0 597.032 XINC 0.001  
 TYPE 2 510.45 0 600.711 XINC 0.001  
 TYPE 2 512.809 0 606.228 XINC 0.001  
 TYPE 2 515.167 0 611.746 XINC 0.001  
 TYPE 2 517.526 0 617.264 XINC 0.001  
 TYPE 3 493.53 0 596.739 XINC 0.001  
 TYPE 3 495.889 0 602.258 XINC 0.001  
 TYPE 3 497.462 0 605.937 XINC 0.001  
 TYPE 3 499.822 0 611.457 XINC 0.001  
 TYPE 3 502.181 0 616.976 XINC 0.001  
 TYPE 3 504.54 0 622.495 XINC 0.001

LOAD GENERATION 1  
 TYPE 1 522.188 0 584.921 XINC 0.001  
 TYPE 1 524.563 0 590.431 XINC 0.001  
 TYPE 1 526.147 0 594.104 XINC 0.001  
 TYPE 1 528.522 0 599.614 XINC 0.001  
 TYPE 1 530.898 0 605.124 XINC 0.001  
 TYPE 1 533.273 0 610.633 XINC 0.001  
 TYPE 2 509.292 0 590.371 XINC 0.001  
 TYPE 2 511.668 0 595.881 XINC 0.001  
 TYPE 2 513.252 0 599.555 XINC 0.001  
 TYPE 2 515.627 0 605.065 XINC 0.001  
 TYPE 2 518.003 0 610.576 XINC 0.001  
 TYPE 2 520.379 0 616.086 XINC 0.001  
 TYPE 3 496.32 0 595.635 XINC 0.001  
 TYPE 3 498.696 0 601.147 XINC 0.001  
 TYPE 3 500.28 0 604.822 XINC 0.001  
 TYPE 3 502.657 0 610.334 XINC 0.001  
 TYPE 3 505.033 0 615.846 XINC 0.001  
 TYPE 3 507.409 0 621.358 XINC 0.001

LOAD GENERATION 1  
 TYPE 1 524.941 0 583.729 XINC 0.001  
 TYPE 1 527.333 0 589.232 XINC 0.001  
 TYPE 1 528.928 0 592.9 XINC 0.001  
 TYPE 1 531.321 0 598.402 XINC 0.001  
 TYPE 1 533.713 0 603.905 XINC 0.001  
 TYPE 1 536.105 0 609.407 XINC 0.001  
 TYPE 2 512.062 0 589.219 XINC 0.001  
 TYPE 2 514.455 0 594.722 XINC 0.001  
 TYPE 2 516.05 0 598.391 XINC 0.001  
 TYPE 2 518.443 0 603.894 XINC 0.001  
 TYPE 2 520.835 0 609.396 XINC 0.001  
 TYPE 2 523.228 0 614.899 XINC 0.001  
 TYPE 3 499.106 0 594.523 XINC 0.001  
 TYPE 3 501.499 0 600.027 XINC 0.001  
 TYPE 3 503.095 0 603.697 XINC 0.001  
 TYPE 3 505.488 0 609.202 XINC 0.001  
 TYPE 3 507.881 0 614.706 XINC 0.001  
 TYPE 3 510.275 0 620.211 XINC 0.001

LOAD GENERATION 1  
 TYPE 1 527.69 0 582.529 XINC 0.001  
 TYPE 1 530.1 0 588.024 XINC 0.001

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TYPE 1 531.706 0 591.687 XINC 0.001
TYPE 1 534.115 0 597.182 XINC 0.001
TYPE 1 536.524 0 602.677 XINC 0.001
TYPE 1 538.934 0 608.172 XINC 0.001
TYPE 2 514.829 0 588.058 XINC 0.001
TYPE 2 517.238 0 593.554 XINC 0.001
TYPE 2 518.845 0 597.217 XINC 0.001
TYPE 2 521.254 0 602.713 XINC 0.001
TYPE 2 523.664 0 608.209 XINC 0.001
TYPE 2 526.073 0 613.704 XINC 0.001
TYPE 3 501.889 0 593.402 XINC 0.001
TYPE 3 504.299 0 598.899 XINC 0.001
TYPE 3 505.906 0 602.564 XINC 0.001
TYPE 3 508.316 0 608.061 XINC 0.001
TYPE 3 510.726 0 613.558 XINC 0.001
TYPE 3 513.137 0 619.056 XINC 0.001
LOAD GENERATION 1
TYPE 1 530.436 0 581.32 XINC 0.001
TYPE 1 532.862 0 586.807 XINC 0.001
TYPE 1 534.48 0 590.466 XINC 0.001
TYPE 1 536.906 0 595.953 XINC 0.001
TYPE 1 539.332 0 601.441 XINC 0.001
TYPE 1 541.758 0 606.929 XINC 0.001
TYPE 2 517.591 0 586.889 XINC 0.001
TYPE 2 520.018 0 592.377 XINC 0.001
TYPE 2 521.635 0 596.036 XINC 0.001
TYPE 2 524.062 0 601.524 XINC 0.001
TYPE 2 526.489 0 607.012 XINC 0.001
TYPE 2 528.915 0 612.5 XINC 0.001
TYPE 3 504.668 0 592.272 XINC 0.001
TYPE 3 507.095 0 597.762 XINC 0.001
TYPE 3 508.713 0 601.422 XINC 0.001
TYPE 3 511.141 0 606.912 XINC 0.001
TYPE 3 513.568 0 612.402 XINC 0.001
TYPE 3 515.995 0 617.891 XINC 0.001
LOAD GENERATION 1
TYPE 1 533.178 0 580.103 XINC 0.001
TYPE 1 535.621 0 585.583 XINC 0.001
TYPE 1 537.25 0 589.236 XINC 0.001
TYPE 1 539.693 0 594.716 XINC 0.001
TYPE 1 542.136 0 600.196 XINC 0.001
TYPE 1 544.579 0 605.676 XINC 0.001
TYPE 2 520.35 0 585.711 XINC 0.001
TYPE 2 522.794 0 591.192 XINC 0.001
TYPE 2 524.423 0 594.846 XINC 0.001
TYPE 2 526.866 0 600.326 XINC 0.001
TYPE 2 529.31 0 605.807 XINC 0.001
TYPE 2 531.753 0 611.287 XINC 0.001
TYPE 3 507.444 0 591.135 XINC 0.001
TYPE 3 509.888 0 596.617 XINC 0.001
TYPE 3 511.517 0 600.272 XINC 0.001
TYPE 3 513.961 0 605.754 XINC 0.001
TYPE 3 516.406 0 611.236 XINC 0.001
TYPE 3 518.85 0 616.718 XINC 0.001
LOAD GENERATION 1
TYPE 1 535.916 0 578.877 XINC 0.001
TYPE 1 538.376 0 584.349 XINC 0.001
TYPE 1 540.016 0 587.998 XINC 0.001
TYPE 1 542.476 0 593.47 XINC 0.001
TYPE 1 544.936 0 598.943 XINC 0.001
TYPE 1 547.396 0 604.415 XINC 0.001
TYPE 2 523.106 0 584.525 XINC 0.001
TYPE 2 525.566 0 589.998 XINC 0.001
TYPE 2 527.206 0 593.647 XINC 0.001
TYPE 2 529.667 0 599.12 XINC 0.001
TYPE 2 532.127 0 604.593 XINC 0.001
TYPE 2 534.587 0 610.066 XINC 0.001
TYPE 3 510.216 0 589.988 XINC 0.001
TYPE 3 512.677 0 595.463 XINC 0.001
TYPE 3 514.318 0 599.113 XINC 0.001
TYPE 3 516.779 0 604.587 XINC 0.001
TYPE 3 519.24 0 610.062 XINC 0.001
TYPE 3 521.701 0 615.537 XINC 0.001
LOAD GENERATION 1
TYPE 1 538.65 0 577.642 XINC 0.001
TYPE 1 541.127 0 583.107 XINC 0.001
TYPE 1 542.778 0 586.751 XINC 0.001
TYPE 1 545.255 0 592.215 XINC 0.001
TYPE 1 547.732 0 597.68 XINC 0.001

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TYPE 1 550.209 0 603.145 XINC 0.001
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TYPE 2 528.335 0 588.796 XINC 0.001
TYPE 2 529.986 0 592.439 XINC 0.001
TYPE 2 532.464 0 597.905 XINC 0.001
TYPE 2 534.941 0 603.37 XINC 0.001
TYPE 2 537.418 0 608.835 XINC 0.001
TYPE 3 512.985 0 588.833 XINC 0.001
TYPE 3 515.463 0 594.3 XINC 0.001
TYPE 3 517.115 0 597.945 XINC 0.001
TYPE 3 519.592 0 603.412 XINC 0.001
TYPE 3 522.07 0 608.879 XINC 0.001
LOAD GENERATION 1
TYPE 3 524.548 0 614.346 XINC 0.001
LOAD GENERATION 1
TYPE 1 541.381 0 576.4 XINC 0.001
TYPE 1 543.875 0 581.857 XINC 0.001
TYPE 1 545.537 0 585.495 XINC 0.001
TYPE 1 548.031 0 590.952 XINC 0.001
TYPE 1 550.525 0 596.41 XINC 0.001
TYPE 1 553.018 0 601.867 XINC 0.001
TYPE 2 528.606 0 582.127 XINC 0.001
TYPE 2 531.1 0 587.585 XINC 0.001
TYPE 2 532.763 0 591.223 XINC 0.001
TYPE 2 535.257 0 596.681 XINC 0.001
TYPE 2 537.751 0 602.139 XINC 0.001
TYPE 2 540.245 0 607.596 XINC 0.001
TYPE 3 515.75 0 587.669 XINC 0.001
TYPE 3 518.245 0 593.129 XINC 0.001
TYPE 3 519.908 0 596.768 XINC 0.001
TYPE 3 522.403 0 602.228 XINC 0.001
TYPE 3 524.897 0 607.687 XINC 0.001
TYPE 3 527.392 0 613.147 XINC 0.001
LOAD GENERATION 1
TYPE 1 544.108 0 575.149 XINC 0.001
TYPE 1 546.618 0 580.598 XINC 0.001
TYPE 1 548.292 0 584.231 XINC 0.001
TYPE 1 550.802 0 589.681 XINC 0.001
TYPE 1 553.313 0 595.13 XINC 0.001
TYPE 1 555.824 0 600.58 XINC 0.001
TYPE 2 531.35 0 580.915 XINC 0.001
TYPE 2 533.861 0 586.365 XINC 0.001
TYPE 2 535.535 0 589.999 XINC 0.001
TYPE 2 538.046 0 595.449 XINC 0.001
TYPE 2 540.557 0 600.899 XINC 0.001
TYPE 2 543.068 0 606.349 XINC 0.001
TYPE 3 518.511 0 586.497 XINC 0.001
TYPE 3 521.023 0 591.949 XINC 0.001
TYPE 3 522.697 0 595.583 XINC 0.001
TYPE 3 525.209 0 601.035 XINC 0.001
TYPE 3 527.72 0 606.487 XINC 0.001
TYPE 3 530.232 0 611.939 XINC 0.001
LOAD GENERATION 1
TYPE 1 546.83 0 573.889 XINC 0.001
TYPE 1 549.358 0 579.331 XINC 0.001
TYPE 1 551.043 0 582.959 XINC 0.001
TYPE 1 553.57 0 588.401 XINC 0.001
TYPE 1 556.097 0 593.842 XINC 0.001
TYPE 1 558.625 0 599.284 XINC 0.001
TYPE 2 534.091 0 579.695 XINC 0.001
TYPE 2 536.619 0 585.137 XINC 0.001
TYPE 2 538.304 0 588.765 XINC 0.001
TYPE 2 540.831 0 594.208 XINC 0.001
TYPE 2 543.359 0 599.65 XINC 0.001
TYPE 2 545.887 0 605.092 XINC 0.001
TYPE 3 521.269 0 585.317 XINC 0.001
TYPE 3 523.798 0 590.761 XINC 0.001
TYPE 3 525.483 0 594.39 XINC 0.001
TYPE 3 528.012 0 599.834 XINC 0.001
TYPE 3 530.54 0 605.278 XINC 0.001
TYPE 3 533.068 0 610.722 XINC 0.001
LOAD GENERATION 1
TYPE 1 549.549 0 572.621 XINC 0.001
TYPE 1 552.093 0 578.055 XINC 0.001
TYPE 1 553.789 0 581.678 XINC 0.001
TYPE 1 556.334 0 587.112 XINC 0.001
TYPE 1 558.878 0 592.546 XINC 0.001
TYPE 1 561.422 0 597.98 XINC 0.001
TYPE 2 536.828 0 578.466 XINC 0.001
TYPE 2 539.372 0 583.901 XINC 0.001

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TYPE 2 541.068 0 587.524 XINC 0.001
TYPE 2 543.613 0 592.958 XINC 0.001
TYPE 2 546.157 0 598.393 XINC 0.001
TYPE 2 548.702 0 603.827 XINC 0.001
TYPE 3 524.024 0 584.128 XINC 0.001
TYPE 3 526.569 0 589.564 XINC 0.001
TYPE 3 528.266 0 593.188 XINC 0.001
TYPE 3 530.811 0 598.624 XINC 0.001
TYPE 3 533.356 0 604.06 XINC 0.001
TYPE 3 535.901 0 609.496 XINC 0.001
LOAD GENERATION 1
TYPE 1 552.264 0 571.345 XINC 0.001
TYPE 1 554.825 0 576.771 XINC 0.001
TYPE 1 556.532 0 580.389 XINC 0.001
TYPE 1 559.093 0 585.815 XINC 0.001
TYPE 1 561.654 0 591.241 XINC 0.001
TYPE 1 564.215 0 596.667 XINC 0.001
TYPE 2 539.561 0 577.229 XINC 0.001
TYPE 2 542.122 0 582.656 XINC 0.001
TYPE 2 543.829 0 586.274 XINC 0.001
TYPE 2 546.391 0 591.7 XINC 0.001
TYPE 2 548.952 0 597.127 XINC 0.001
TYPE 2 551.513 0 602.553 XINC 0.001
TYPE 3 526.774 0 582.93 XINC 0.001
TYPE 3 529.336 0 588.358 XINC 0.001
TYPE 3 531.044 0 591.977 XINC 0.001
TYPE 3 533.606 0 597.405 XINC 0.001
TYPE 3 536.168 0 602.834 XINC 0.001
TYPE 3 538.73 0 608.262 XINC 0.001
LOAD GENERATION 1
TYPE 1 554.975 0 570.06 XINC 0.001
TYPE 1 557.553 0 575.479 XINC 0.001
TYPE 1 559.271 0 579.091 XINC 0.001
TYPE 1 561.849 0 584.509 XINC 0.001
TYPE 1 564.426 0 589.927 XINC 0.001
TYPE 1 567.004 0 595.345 XINC 0.001
TYPE 2 542.29 0 575.984 XINC 0.001
TYPE 2 544.868 0 581.402 XINC 0.001
TYPE 2 546.587 0 585.015 XINC 0.001
TYPE 2 549.164 0 590.434 XINC 0.001
TYPE 2 551.742 0 595.852 XINC 0.001
TYPE 2 554.32 0 601.271 XINC 0.001
TYPE 3 529.521 0 581.724 XINC 0.001
TYPE 3 532.1 0 587.144 XINC 0.001
TYPE 3 533.819 0 590.758 XINC 0.001
TYPE 3 536.397 0 596.178 XINC 0.001
TYPE 3 538.976 0 601.598 XINC 0.001
TYPE 3 541.555 0 607.019 XINC 0.001
LOAD GENERATION 1
TYPE 1 557.682 0 568.767 XINC 0.001
TYPE 1 560.277 0 574.178 XINC 0.001
TYPE 1 562.006 0 577.784 XINC 0.001
TYPE 1 564.6 0 583.195 XINC 0.001
TYPE 1 567.195 0 588.605 XINC 0.001
TYPE 1 569.789 0 594.015 XINC 0.001
TYPE 2 545.016 0 574.73 XINC 0.001
TYPE 2 547.61 0 580.141 XINC 0.001
TYPE 2 549.34 0 583.748 XINC 0.001
TYPE 2 551.934 0 589.158 XINC 0.001
TYPE 2 554.529 0 594.569 XINC 0.001
TYPE 2 557.123 0 599.98 XINC 0.001
TYPE 3 532.264 0 580.509 XINC 0.001
TYPE 3 534.86 0 585.922 XINC 0.001
TYPE 3 536.59 0 589.53 XINC 0.001
TYPE 3 539.185 0 594.942 XINC 0.001
TYPE 3 541.78 0 600.355 XINC 0.001
TYPE 3 544.376 0 605.767 XINC 0.001
LOAD GENERATION 1
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TYPE 1 562.996 0 572.868 XINC 0.001
TYPE 1 564.737 0 576.47 XINC 0.001
TYPE 1 567.348 0 581.872 XINC 0.001
TYPE 1 569.959 0 587.274 XINC 0.001
TYPE 1 572.57 0 592.676 XINC 0.001
TYPE 2 547.737 0 573.468 XINC 0.001
TYPE 2 550.348 0 578.87 XINC 0.001
TYPE 2 552.089 0 582.472 XINC 0.001
TYPE 2 554.7 0 587.875 XINC 0.001
TYPE 2 557.312 0 593.277 XINC 0.001

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TYPE 3 537.616 0 584.691 XINC 0.001
TYPE 3 539.357 0 588.294 XINC 0.001
TYPE 3 541.969 0 593.698 XINC 0.001
TYPE 3 544.581 0 599.102 XINC 0.001
TYPE 3 547.193 0 604.506 XINC 0.001
LOAD GENERATION 1
TYPE 1 563.084 0 566.157 XINC 0.001
TYPE 1 565.712 0 571.551 XINC 0.001
TYPE 1 567.464 0 575.147 XINC 0.001
TYPE 1 570.091 0 580.541 XINC 0.001
TYPE 1 572.719 0 585.935 XINC 0.001
TYPE 1 575.347 0 591.329 XINC 0.001
TYPE 2 550.455 0 572.197 XINC 0.001
TYPE 2 553.083 0 577.591 XINC 0.001
TYPE 2 554.834 0 581.188 XINC 0.001
TYPE 2 557.462 0 586.582 XINC 0.001
TYPE 2 560.09 0 591.977 XINC 0.001
TYPE 2 562.718 0 597.372 XINC 0.001
TYPE 3 537.739 0 578.055 XINC 0.001
TYPE 3 540.368 0 583.451 XINC 0.001
TYPE 3 542.12 0 587.049 XINC 0.001
TYPE 3 544.749 0 592.445 XINC 0.001
TYPE 3 547.378 0 597.841 XINC 0.001
TYPE 3 550.006 0 603.237 XINC 0.001
LOAD GENERATION 1
TYPE 1 565.779 0 564.839 XINC 0.001
TYPE 1 568.424 0 570.224 XINC 0.001
TYPE 1 570.186 0 573.815 XINC 0.001
TYPE 1 572.831 0 579.201 XINC 0.001
TYPE 1 575.475 0 584.587 XINC 0.001
TYPE 1 578.119 0 589.973 XINC 0.001
TYPE 2 553.168 0 570.918 XINC 0.001
TYPE 2 555.813 0 576.304 XINC 0.001
TYPE 2 557.576 0 579.895 XINC 0.001
TYPE 2 560.22 0 585.282 XINC 0.001
TYPE 2 562.865 0 590.668 XINC 0.001
TYPE 2 565.509 0 596.055 XINC 0.001
TYPE 3 540.471 0 576.815 XINC 0.001
TYPE 3 543.116 0 582.203 XINC 0.001
TYPE 3 544.88 0 585.795 XINC 0.001
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TYPE 3 550.17 0 596.571 XINC 0.001
TYPE 3 552.816 0 601.959 XINC 0.001
LOAD GENERATION 1
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TYPE 1 571.131 0 568.89 XINC 0.001
TYPE 1 572.905 0 572.475 XINC 0.001
TYPE 1 575.566 0 577.853 XINC 0.001
TYPE 1 578.227 0 583.231 XINC 0.001
TYPE 1 580.888 0 588.608 XINC 0.001
TYPE 2 555.878 0 569.63 XINC 0.001
TYPE 2 558.539 0 575.009 XINC 0.001
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TYPE 2 562.974 0 583.973 XINC 0.001
TYPE 2 565.635 0 589.351 XINC 0.001
TYPE 2 568.297 0 594.729 XINC 0.001
TYPE 3 543.199 0 575.567 XINC 0.001
TYPE 3 545.861 0 580.947 XINC 0.001
TYPE 3 547.635 0 584.533 XINC 0.001
TYPE 3 550.297 0 589.913 XINC 0.001
TYPE 3 552.959 0 595.293 XINC 0.001
TYPE 3 555.621 0 600.673 XINC 0.001
LOAD GENERATION 1
TYPE 1 571.157 0 562.178 XINC 0.001
TYPE 1 573.834 0 567.547 XINC 0.001
TYPE 1 575.619 0 571.127 XINC 0.001
TYPE 1 578.297 0 576.496 XINC 0.001
TYPE 1 580.974 0 581.866 XINC 0.001
TYPE 1 583.652 0 587.235 XINC 0.001
TYPE 2 558.584 0 568.335 XINC 0.001
TYPE 2 561.261 0 573.705 XINC 0.001
TYPE 2 563.047 0 577.285 XINC 0.001
TYPE 2 565.724 0 582.655 XINC 0.001
TYPE 2 568.402 0 588.025 XINC 0.001
TYPE 2 571.08 0 593.395 XINC 0.001
TYPE 3 545.923 0 574.31 XINC 0.001
TYPE 3 548.602 0 579.682 XINC 0.001

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TYPE 3 550.387 0 583.263 XINC 0.001
TYPE 3 553.066 0 588.635 XINC 0.001
TYPE 3 555.744 0 594.006 XINC 0.001
TYPE 3 558.423 0 599.378 XINC 0.001
LOAD GENERATION 1
TYPE 1 573.84 0 560.835 XINC 0.001
TYPE 1 576.534 0 566.196 XINC 0.001
TYPE 1 578.33 0 569.77 XINC 0.001
TYPE 1 581.024 0 575.131 XINC 0.001
TYPE 1 583.718 0 580.493 XINC 0.001
TYPE 1 586.412 0 585.854 XINC 0.001
TYPE 2 561.285 0 567.031 XINC 0.001
TYPE 2 563.98 0 572.392 XINC 0.001
TYPE 2 565.776 0 575.967 XINC 0.001
TYPE 2 568.47 0 581.329 XINC 0.001
TYPE 2 571.164 0 586.69 XINC 0.001
TYPE 2 573.859 0 592.052 XINC 0.001
TYPE 3 548.643 0 573.045 XINC 0.001
TYPE 3 551.338 0 578.408 XINC 0.001
TYPE 3 553.135 0 581.984 XINC 0.001
TYPE 3 555.83 0 587.347 XINC 0.001
TYPE 3 558.525 0 592.711 XINC 0.001
TYPE 3 561.22 0 598.074 XINC 0.001
LOAD GENERATION 1
TYPE 1 576.518 0 559.484 XINC 0.001
TYPE 1 579.229 0 564.837 XINC 0.001
TYPE 1 581.036 0 568.405 XINC 0.001
TYPE 1 583.746 0 573.758 XINC 0.001
TYPE 1 586.457 0 579.111 XINC 0.001
TYPE 1 589.167 0 584.464 XINC 0.001
TYPE 2 563.983 0 565.718 XINC 0.001
TYPE 2 566.694 0 571.072 XINC 0.001
TYPE 2 568.501 0 574.641 XINC 0.001
TYPE 2 571.212 0 579.994 XINC 0.001
TYPE 2 573.923 0 585.347 XINC 0.001
TYPE 2 576.633 0 590.701 XINC 0.001
TYPE 3 551.36 0 571.771 XINC 0.001
TYPE 3 554.071 0 577.127 XINC 0.001
TYPE 3 555.879 0 580.697 XINC 0.001
TYPE 3 558.59 0 586.052 XINC 0.001
TYPE 3 561.302 0 591.407 XINC 0.001
TYPE 3 564.013 0 596.762 XINC 0.001
LOAD GENERATION 1
TYPE 1 579.193 0 558.124 XINC 0.001
TYPE 1 581.92 0 563.469 XINC 0.001
TYPE 1 583.738 0 567.032 XINC 0.001
TYPE 1 586.465 0 572.376 XINC 0.001
TYPE 1 589.192 0 577.721 XINC 0.001
TYPE 1 591.918 0 583.065 XINC 0.001
TYPE 2 566.677 0 564.397 XINC 0.001
TYPE 2 569.404 0 569.742 XINC 0.001
TYPE 2 571.222 0 573.306 XINC 0.001
TYPE 2 573.949 0 578.651 XINC 0.001
TYPE 2 576.677 0 583.996 XINC 0.001
TYPE 2 579.404 0 589.341 XINC 0.001
TYPE 3 554.072 0 570.49 XINC 0.001
TYPE 3 556.8 0 575.836 XINC 0.001
TYPE 3 558.619 0 579.401 XINC 0.001
TYPE 3 561.347 0 584.747 XINC 0.001
TYPE 3 564.075 0 590.094 XINC 0.001
TYPE 3 566.803 0 595.441 XINC 0.001
LOAD GENERATION 1
TYPE 1 581.863 0 556.757 XINC 0.001
TYPE 1 584.606 0 562.093 XINC 0.001
TYPE 1 586.435 0 565.65 XINC 0.001
TYPE 1 589.179 0 570.986 XINC 0.001
TYPE 1 591.922 0 576.322 XINC 0.001
TYPE 1 594.665 0 581.658 XINC 0.001
TYPE 2 569.366 0 563.068 XINC 0.001
TYPE 2 572.11 0 568.405 XINC 0.001
TYPE 2 573.939 0 571.963 XINC 0.001
TYPE 2 576.683 0 577.299 XINC 0.001
TYPE 2 579.427 0 582.636 XINC 0.001
TYPE 2 582.17 0 587.973 XINC 0.001
TYPE 3 556.78 0 569.199 XINC 0.001
TYPE 3 559.525 0 574.538 XINC 0.001
TYPE 3 561.355 0 578.097 XINC 0.001
TYPE 3 564.099 0 583.435 XINC 0.001
TYPE 3 566.844 0 588.773 XINC 0.001

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TYPE 3 569.588 0 594.111 XINC 0.001
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TYPE 1 587.289 0 560.709 XINC 0.001
TYPE 1 589.128 0 564.26 XINC 0.001
TYPE 1 591.888 0 569.588 XINC 0.001
TYPE 1 594.648 0 574.915 XINC 0.001
TYPE 1 597.408 0 580.243 XINC 0.001
TYPE 2 572.052 0 561.731 XINC 0.001
TYPE 2 574.812 0 567.059 XINC 0.001
TYPE 2 576.652 0 570.611 XINC 0.001
TYPE 2 579.412 0 575.939 XINC 0.001
TYPE 2 582.172 0 581.267 XINC 0.001
TYPE 2 584.932 0 586.596 XINC 0.001
TYPE 3 559.485 0 567.901 XINC 0.001
TYPE 3 562.246 0 573.231 XINC 0.001
TYPE 3 564.086 0 576.784 XINC 0.001
TYPE 3 566.847 0 582.114 XINC 0.001
TYPE 3 569.608 0 587.443 XINC 0.001
TYPE 3 572.369 0 592.773 XINC 0.001
LOAD GENERATION 1
TYPE 1 587.19 0 553.997 XINC 0.001
TYPE 1 589.967 0 559.316 XINC 0.001
TYPE 1 591.818 0 562.862 XINC 0.001
TYPE 1 594.594 0 568.181 XINC 0.001
TYPE 1 597.37 0 573.5 XINC 0.001
TYPE 1 600.146 0 578.819 XINC 0.001
TYPE 2 574.733 0 560.385 XINC 0.001
TYPE 2 577.51 0 565.705 XINC 0.001
TYPE 2 579.361 0 569.251 XINC 0.001
TYPE 2 582.137 0 574.571 XINC 0.001
TYPE 2 584.914 0 579.891 XINC 0.001
TYPE 2 587.69 0 585.21 XINC 0.001
TYPE 3 562.185 0 566.594 XINC 0.001
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TYPE 3 572.369 0 586.105 XINC 0.001
TYPE 3 575.146 0 591.426 XINC 0.001
LOAD GENERATION 1
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TYPE 1 594.502 0 561.455 XINC 0.001
TYPE 1 597.295 0 566.766 XINC 0.001
TYPE 1 600.088 0 572.076 XINC 0.001
TYPE 1 602.88 0 577.387 XINC 0.001
TYPE 2 577.41 0 559.032 XINC 0.001
TYPE 2 580.203 0 564.343 XINC 0.001
TYPE 2 582.065 0 567.883 XINC 0.001
TYPE 2 584.858 0 573.194 XINC 0.001
TYPE 2 587.651 0 578.505 XINC 0.001
TYPE 2 590.444 0 583.816 XINC 0.001
TYPE 3 564.881 0 565.279 XINC 0.001
TYPE 3 567.675 0 570.591 XINC 0.001
TYPE 3 569.538 0 574.133 XINC 0.001
TYPE 3 572.332 0 579.446 XINC 0.001
TYPE 3 575.125 0 584.758 XINC 0.001
TYPE 3 577.919 0 590.071 XINC 0.001
LOAD GENERATION 1
TYPE 1 592.501 0 551.204 XINC 0.001
TYPE 1 595.31 0 556.506 XINC 0.001
TYPE 1 597.182 0 560.041 XINC 0.001
TYPE 1 599.992 0 565.342 XINC 0.001
TYPE 1 602.801 0 570.644 XINC 0.001
TYPE 1 605.61 0 575.946 XINC 0.001
TYPE 2 580.083 0 557.67 XINC 0.001
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TYPE 2 590.384 0 577.111 XINC 0.001
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TYPE 3 572.257 0 572.795 XINC 0.001
TYPE 3 575.068 0 578.099 XINC 0.001
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TYPE 3 580.688 0 588.707 XINC 0.001
LOAD GENERATION 1
TYPE 1 595.15 0 549.796 XINC 0.001

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TYPE 2 590.287 0 570.416 XINC 0.001
TYPE 2 593.113 0 575.709 XINC 0.001
TYPE 2 595.938 0 581.003 XINC 0.001
TYPE 3 570.262 0 562.624 XINC 0.001
TYPE 3 573.088 0 567.919 XINC 0.001
TYPE 3 574.973 0 571.449 XINC 0.001
TYPE 3 577.799 0 576.744 XINC 0.001
TYPE 3 580.626 0 582.04 XINC 0.001
TYPE 3 583.452 0 587.335 XINC 0.001
LOAD GENERATION 1
TYPE 1 597.794 0 548.379 XINC 0.001
TYPE 1 600.636 0 553.663 XINC 0.001
TYPE 1 602.53 0 557.186 XINC 0.001
TYPE 1 605.372 0 562.471 XINC 0.001
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TYPE 1 611.055 0 573.039 XINC 0.001
TYPE 2 585.416 0 554.921 XINC 0.001
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TYPE 2 590.153 0 563.729 XINC 0.001
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TYPE 3 583.37 0 580.667 XINC 0.001
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TYPE 1 613.771 0 571.573 XINC 0.001
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TYPE 3 578.485 0 565.213 XINC 0.001
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TYPE 3 583.25 0 574.009 XINC 0.001
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TYPE 3 588.968 0 584.565 XINC 0.001
LOAD GENERATION 1
TYPE 1 603.069 0 545.521 XINC 0.001
TYPE 1 605.944 0 550.788 XINC 0.001
TYPE 1 607.86 0 554.299 XINC 0.001
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TYPE 1 613.608 0 564.832 XINC 0.001
TYPE 1 616.483 0 570.099 XINC 0.001
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TYPE 2 604.147 0 576.72 XINC 0.001
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TYPE 3 583.094 0 567.36 XINC 0.001
TYPE 3 585.969 0 572.629 XINC 0.001
TYPE 3 588.845 0 577.898 XINC 0.001
TYPE 3 591.72 0 583.167 XINC 0.001
LOAD GENERATION 1
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TYPE 1 610.518 0 552.843 XINC 0.001
TYPE 1 613.409 0 558.101 XINC 0.001

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TYPE 3 580.973 0 557.214 XINC 0.001
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TYPE 3 585.792 0 565.98 XINC 0.001
TYPE 3 588.684 0 571.24 XINC 0.001
TYPE 3 591.576 0 576.5 XINC 0.001
TYPE 3 594.467 0 581.76 XINC 0.001
LOAD GENERATION 1
TYPE 1 608.327 0 542.63 XINC 0.001
TYPE 1 611.234 0 547.879 XINC 0.001
TYPE 1 613.172 0 551.379 XINC 0.001
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TYPE 3 591.395 0 569.843 XINC 0.001
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TYPE 2 606.469 0 561.879 XINC 0.001
TYPE 2 609.392 0 567.12 XINC 0.001
TYPE 2 612.316 0 572.36 XINC 0.001
TYPE 3 586.304 0 554.459 XINC 0.001
TYPE 3 589.228 0 559.701 XINC 0.001
TYPE 3 591.177 0 563.196 XINC 0.001
TYPE 3 594.101 0 568.438 XINC 0.001
TYPE 3 597.025 0 573.68 XINC 0.001
TYPE 3 599.949 0 578.922 XINC 0.001
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TYPE 2 604.252 0 551.709 XINC 0.001
TYPE 2 606.212 0 555.196 XINC 0.001
TYPE 2 609.151 0 560.428 XINC 0.001
TYPE 2 612.09 0 565.659 XINC 0.001
TYPE 2 615.029 0 570.891 XINC 0.001
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TYPE 3 599.743 0 572.258 XINC 0.001
TYPE 3 602.683 0 577.491 XINC 0.001
LOAD GENERATION 1
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TYPE 1 621.106 0 546.937 XINC 0.001
TYPE 1 624.061 0 552.159 XINC 0.001
TYPE 1 627.016 0 557.381 XINC 0.001
TYPE 1 629.971 0 562.603 XINC 0.001
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TYPE 3 596.544 0 560.379 XINC 0.001
TYPE 3 599.5 0 565.603 XINC 0.001
TYPE 3 602.456 0 570.827 XINC 0.001
TYPE 3 605.413 0 576.05 XINC 0.001
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TYPE 3 605.166 0 569.387 XINC 0.001
TYPE 3 608.138 0 574.602 XINC 0.001
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TYPE 1 624.38 0 540.466 XINC 0.001
TYPE 1 626.372 0 543.935 XINC 0.001
TYPE 1 629.359 0 549.139 XINC 0.001
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TYPE 3 604.882 0 562.734 XINC 0.001
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TYPE 2 625.839 0 564.928 XINC 0.001
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TYPE 3 604.562 0 556.09 XINC 0.001
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TYPE 2 622.491 0 553.045 XINC 0.001

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TYPE 3 610.246 0 559.832 XINC 0.001
TYPE 3 613.266 0 565.019 XINC 0.001
TYPE 3 616.287 0 570.206 XINC 0.001
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TYPE 2 625.145 0 551.544 XINC 0.001
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TYPE 3 607.861 0 549.739 XINC 0.001
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TYPE 1 636.848 0 537.835 XINC 0.001
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TYPE 2 619.658 0 536.257 XINC 0.001
TYPE 2 622.709 0 541.424 XINC 0.001
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TYPE 2 633.898 0 560.369 XINC 0.001
TYPE 3 607.452 0 543.114 XINC 0.001
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TYPE 3 612.54 0 551.728 XINC 0.001
TYPE 3 615.592 0 556.897 XINC 0.001
TYPE 3 618.644 0 562.065 XINC 0.001
TYPE 3 621.697 0 567.233 XINC 0.001
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TYPE 1 639.456 0 536.29 XINC 0.001
TYPE 1 642.523 0 541.446 XINC 0.001
TYPE 1 645.59 0 546.603 XINC 0.001
TYPE 1 648.657 0 551.76 XINC 0.001
TYPE 2 622.26 0 534.765 XINC 0.001
TYPE 2 625.328 0 539.922 XINC 0.001
TYPE 2 627.372 0 543.36 XINC 0.001
TYPE 2 630.44 0 548.518 XINC 0.001
TYPE 2 633.507 0 553.675 XINC 0.001
TYPE 2 636.575 0 558.832 XINC 0.001
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TYPE 3 613.144 0 546.819 XINC 0.001
TYPE 3 615.19 0 550.258 XINC 0.001
TYPE 3 618.258 0 555.417 XINC 0.001
TYPE 3 621.326 0 560.576 XINC 0.001
TYPE 3 624.395 0 565.735 XINC 0.001
LOAD GENERATION 1
TYPE 1 636.92 0 526.157 XINC 0.001
TYPE 1 640.003 0 531.305 XINC 0.001
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TYPE 2 633.08 0 546.992 XINC 0.001
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TYPE 3 612.695 0 540.197 XINC 0.001

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TYPE 1 644.656 0 533.175 XINC 0.001
TYPE 1 647.755 0 538.313 XINC 0.001
TYPE 1 650.854 0 543.451 XINC 0.001
TYPE 1 653.952 0 548.588 XINC 0.001
TYPE 2 627.451 0 531.756 XINC 0.001
TYPE 2 630.55 0 536.894 XINC 0.001
TYPE 2 632.617 0 540.32 XINC 0.001
TYPE 2 635.716 0 545.458 XINC 0.001
TYPE 2 638.815 0 550.597 XINC 0.001
TYPE 2 641.914 0 555.735 XINC 0.001
TYPE 3 615.31 0 538.726 XINC 0.001
TYPE 3 618.41 0 543.866 XINC 0.001
TYPE 3 620.477 0 547.293 XINC 0.001
TYPE 3 623.577 0 552.433 XINC 0.001
TYPE 3 626.677 0 557.573 XINC 0.001
TYPE 3 629.777 0 562.712 XINC 0.001
LOAD GENERATION 1
TYPE 1 642.058 0 523.058 XINC 0.001
TYPE 1 645.172 0 528.187 XINC 0.001
TYPE 1 647.249 0 531.606 XINC 0.001
TYPE 1 650.363 0 536.734 XINC 0.001
TYPE 1 653.478 0 541.862 XINC 0.001
TYPE 1 656.593 0 546.99 XINC 0.001
TYPE 2 630.04 0 530.24 XINC 0.001
TYPE 2 633.155 0 535.369 XINC 0.001
TYPE 2 635.232 0 538.788 XINC 0.001
TYPE 2 638.347 0 543.916 XINC 0.001
TYPE 2 641.462 0 549.045 XINC 0.001
TYPE 2 644.577 0 554.174 XINC 0.001
TYPE 3 617.92 0 537.247 XINC 0.001
TYPE 3 621.036 0 542.378 XINC 0.001
TYPE 3 623.113 0 545.798 XINC 0.001
TYPE 3 626.229 0 550.928 XINC 0.001
TYPE 3 629.345 0 556.059 XINC 0.001
TYPE 3 632.461 0 561.189 XINC 0.001
LOAD GENERATION 1
TYPE 1 644.619 0 521.497 XINC 0.001
TYPE 1 647.75 0 526.616 XINC 0.001
TYPE 1 649.837 0 530.028 XINC 0.001
TYPE 1 652.967 0 535.147 XINC 0.001
TYPE 1 656.098 0 540.265 XINC 0.001
TYPE 1 659.228 0 545.384 XINC 0.001
TYPE 2 632.624 0 528.715 XINC 0.001
TYPE 2 635.755 0 533.835 XINC 0.001
TYPE 2 637.842 0 537.247 XINC 0.001
TYPE 2 640.973 0 542.366 XINC 0.001
TYPE 2 644.103 0 547.486 XINC 0.001
TYPE 2 647.234 0 552.605 XINC 0.001
TYPE 3 620.526 0 535.76 XINC 0.001
TYPE 3 623.657 0 540.881 XINC 0.001
TYPE 3 625.745 0 544.295 XINC 0.001
TYPE 3 628.877 0 549.416 XINC 0.001
TYPE 3 632.009 0 554.536 XINC 0.001
TYPE 3 635.14 0 559.657 XINC 0.001
LOAD GENERATION 1
TYPE 1 647.176 0 519.928 XINC 0.001
TYPE 1 650.323 0 525.037 XINC 0.001
TYPE 1 652.42 0 528.443 XINC 0.001
TYPE 1 655.566 0 533.552 XINC 0.001
TYPE 1 658.713 0 538.661 XINC 0.001
TYPE 1 661.859 0 543.77 XINC 0.001
TYPE 2 635.203 0 527.183 XINC 0.001
TYPE 2 638.35 0 532.293 XINC 0.001
TYPE 2 640.447 0 535.699 XINC 0.001
TYPE 2 643.594 0 540.808 XINC 0.001
TYPE 2 646.74 0 545.918 XINC 0.001
TYPE 2 649.887 0 551.027 XINC 0.001
TYPE 3 623.127 0 534.265 XINC 0.001
TYPE 3 626.274 0 539.376 XINC 0.001
TYPE 3 628.372 0 542.784 XINC 0.001
TYPE 3 631.52 0 547.895 XINC 0.001

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TYPE 3 634.667 0 553.006 XINC 0.001
TYPE 3 637.815 0 558.117 XINC 0.001
LOAD GENERATION 1
TYPE 1 649.728 0 518.351 XINC 0.001
TYPE 1 652.89 0 523.45 XINC 0.001
TYPE 1 654.998 0 526.85 XINC 0.001
TYPE 1 658.16 0 531.949 XINC 0.001
TYPE 1 661.322 0 537.048 XINC 0.001
TYPE 1 664.484 0 542.147 XINC 0.001
TYPE 2 637.777 0 525.643 XINC 0.001
TYPE 2 640.94 0 530.743 XINC 0.001
TYPE 2 643.048 0 534.143 XINC 0.001
TYPE 2 646.21 0 539.242 XINC 0.001
TYPE 2 649.373 0 544.342 XINC 0.001
TYPE 2 652.535 0 549.442 XINC 0.001
TYPE 3 625.723 0 532.762 XINC 0.001
TYPE 3 628.886 0 537.864 XINC 0.001
TYPE 3 630.995 0 541.265 XINC 0.001
TYPE 3 634.158 0 546.366 XINC 0.001
TYPE 3 637.322 0 551.467 XINC 0.001
TYPE 3 640.485 0 556.568 XINC 0.001
LOAD GENERATION 1
TYPE 1 652.275 0 516.766 XINC 0.001
TYPE 1 655.453 0 521.855 XINC 0.001
TYPE 1 657.572 0 525.248 XINC 0.001
TYPE 1 660.749 0 530.338 XINC 0.001
TYPE 1 663.927 0 535.427 XINC 0.001
TYPE 1 667.105 0 540.517 XINC 0.001
TYPE 2 640.347 0 524.095 XINC 0.001
TYPE 2 643.525 0 529.185 XINC 0.001
TYPE 2 645.644 0 532.578 XINC 0.001
TYPE 2 648.822 0 537.668 XINC 0.001
TYPE 2 652 0 542.758 XINC 0.001
TYPE 2 655.178 0 547.848 XINC 0.001
TYPE 3 628.315 0 531.252 XINC 0.001
TYPE 3 631.494 0 536.343 XINC 0.001
TYPE 3 633.613 0 539.737 XINC 0.001
TYPE 3 636.792 0 544.829 XINC 0.001
TYPE 3 639.971 0 549.92 XINC 0.001
TYPE 3 643.15 0 555.012 XINC 0.001
LOAD GENERATION 1
TYPE 1 654.818 0 515.173 XINC 0.001
TYPE 1 658.011 0 520.253 XINC 0.001
TYPE 1 660.14 0 523.639 XINC 0.001
TYPE 1 663.333 0 528.719 XINC 0.001
TYPE 1 666.527 0 533.798 XINC 0.001
TYPE 1 669.72 0 538.878 XINC 0.001
TYPE 2 642.912 0 522.539 XINC 0.001
TYPE 2 646.106 0 527.619 XINC 0.001
TYPE 2 648.235 0 531.006 XINC 0.001
TYPE 2 651.429 0 536.086 XINC 0.001
TYPE 2 654.622 0 541.166 XINC 0.001
TYPE 2 657.816 0 546.246 XINC 0.001
TYPE 3 630.902 0 529.733 XINC 0.001
TYPE 3 634.096 0 534.814 XINC 0.001
TYPE 3 636.226 0 538.202 XINC 0.001
TYPE 3 639.421 0 543.284 XINC 0.001
TYPE 3 642.615 0 548.365 XINC 0.001
TYPE 3 645.81 0 553.447 XINC 0.001
LOAD GENERATION 1
TYPE 1 657.355 0 513.573 XINC 0.001
TYPE 1 660.564 0 518.642 XINC 0.001
TYPE 1 662.703 0 522.022 XINC 0.001
TYPE 1 665.912 0 527.092 XINC 0.001
TYPE 1 669.121 0 532.162 XINC 0.001
TYPE 1 672.33 0 537.231 XINC 0.001
TYPE 2 645.472 0 520.975 XINC 0.001
TYPE 2 648.682 0 526.045 XINC 0.001
TYPE 2 650.821 0 529.425 XINC 0.001
TYPE 2 654.03 0 534.496 XINC 0.001
TYPE 2 657.24 0 539.566 XINC 0.001
TYPE 2 660.449 0 544.636 XINC 0.001
TYPE 3 633.484 0 528.206 XINC 0.001
TYPE 3 636.694 0 533.277 XINC 0.001
TYPE 3 638.835 0 536.659 XINC 0.001
TYPE 3 642.045 0 541.73 XINC 0.001
TYPE 3 645.255 0 546.802 XINC 0.001
TYPE 3 648.465 0 551.874 XINC 0.001
LOAD GENERATION 1

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TYPE 1 659.887 0 511.964 XINC 0.001
TYPE 1 663.112 0 517.024 XINC 0.001
TYPE 1 665.262 0 520.397 XINC 0.001
TYPE 1 668.486 0 525.457 XINC 0.001
TYPE 1 671.711 0 530.517 XINC 0.001
TYPE 1 674.936 0 535.577 XINC 0.001
TYPE 2 648.027 0 519.403 XINC 0.001
TYPE 2 651.252 0 524.464 XINC 0.001
TYPE 2 653.402 0 527.837 XINC 0.001
TYPE 2 656.627 0 532.897 XINC 0.001
TYPE 2 659.852 0 537.958 XINC 0.001
TYPE 2 663.077 0 543.018 XINC 0.001
TYPE 3 636.062 0 526.671 XINC 0.001
TYPE 3 639.288 0 531.733 XINC 0.001
TYPE 3 641.438 0 535.107 XINC 0.001
TYPE 3 644.664 0 540.169 XINC 0.001
TYPE 3 647.89 0 545.231 XINC 0.001
TYPE 3 651.116 0 550.293 XINC 0.001
LOAD GENERATION 1
TYPE 1 662.415 0 510.348 XINC 0.001
TYPE 1 665.655 0 515.398 XINC 0.001
TYPE 1 667.815 0 518.764 XINC 0.001
TYPE 1 671.056 0 523.814 XINC 0.001
TYPE 1 674.296 0 528.864 XINC 0.001
TYPE 1 677.536 0 533.914 XINC 0.001
TYPE 2 650.578 0 517.824 XINC 0.001
TYPE 2 653.818 0 522.874 XINC 0.001
TYPE 2 655.979 0 526.241 XINC 0.001
TYPE 2 659.219 0 531.291 XINC 0.001
TYPE 2 662.46 0 536.341 XINC 0.001
TYPE 2 665.701 0 541.392 XINC 0.001
TYPE 3 638.635 0 525.128 XINC 0.001
TYPE 3 641.876 0 530.18 XINC 0.001
TYPE 3 644.037 0 533.548 XINC 0.001
TYPE 3 647.279 0 538.6 XINC 0.001
TYPE 3 650.52 0 543.652 XINC 0.001
TYPE 3 653.762 0 548.703 XINC 0.001
LOAD GENERATION 1
TYPE 1 664.937 0 508.724 XINC 0.001
TYPE 1 668.193 0 513.764 XINC 0.001
TYPE 1 670.364 0 517.124 XINC 0.001
TYPE 1 673.619 0 522.163 XINC 0.001
TYPE 1 676.875 0 527.203 XINC 0.001
TYPE 1 680.131 0 532.243 XINC 0.001
TYPE 2 653.123 0 516.236 XINC 0.001
TYPE 2 656.38 0 521.276 XINC 0.001
TYPE 2 658.55 0 524.637 XINC 0.001
TYPE 2 661.806 0 529.677 XINC 0.001
TYPE 2 665.063 0 534.717 XINC 0.001
TYPE 2 668.319 0 539.758 XINC 0.001
TYPE 3 641.203 0 523.577 XINC 0.001
TYPE 3 644.46 0 528.619 XINC 0.001
TYPE 3 646.631 0 531.98 XINC 0.001
TYPE 3 649.888 0 537.022 XINC 0.001
TYPE 3 653.145 0 542.064 XINC 0.001
TYPE 3 656.402 0 547.106 XINC 0.001
LOAD GENERATION 1
TYPE 1 667.455 0 507.092 XINC 0.001
TYPE 1 670.726 0 512.122 XINC 0.001
TYPE 1 672.907 0 515.475 XINC 0.001
TYPE 1 676.178 0 520.505 XINC 0.001
TYPE 1 679.449 0 525.535 XINC 0.001
TYPE 1 682.721 0 530.564 XINC 0.001
TYPE 2 655.664 0 514.641 XINC 0.001
TYPE 2 658.936 0 519.671 XINC 0.001
TYPE 2 661.117 0 523.024 XINC 0.001
TYPE 2 664.388 0 528.055 XINC 0.001
TYPE 2 667.66 0 533.085 XINC 0.001
TYPE 2 670.932 0 538.115 XINC 0.001
TYPE 3 643.766 0 522.018 XINC 0.001
TYPE 3 647.039 0 527.05 XINC 0.001
TYPE 3 649.22 0 530.405 XINC 0.001
TYPE 3 652.493 0 535.437 XINC 0.001
TYPE 3 655.766 0 540.469 XINC 0.001
TYPE 3 659.038 0 545.5 XINC 0.001
LOAD GENERATION 1
TYPE 1 669.967 0 505.453 XINC 0.001
TYPE 1 673.254 0 510.472 XINC 0.001
TYPE 1 675.445 0 513.819 XINC 0.001

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TYPE 1 678.732 0 518.838 XINC 0.001
TYPE 1 682.019 0 523.858 XINC 0.001
TYPE 1 685.306 0 528.878 XINC 0.001
TYPE 2 658.2 0 513.037 XINC 0.001
TYPE 2 661.487 0 518.058 XINC 0.001
TYPE 2 663.678 0 521.404 XINC 0.001
TYPE 2 666.965 0 526.424 XINC 0.001
TYPE 2 670.253 0 531.445 XINC 0.001
TYPE 2 673.54 0 536.465 XINC 0.001
TYPE 3 646.325 0 520.452 XINC 0.001
TYPE 3 649.613 0 525.474 XINC 0.001
TYPE 3 651.805 0 528.822 XINC 0.001
TYPE 3 655.093 0 533.843 XINC 0.001
TYPE 3 658.381 0 538.865 XINC 0.001
TYPE 3 661.669 0 543.887 XINC 0.001
LOAD GENERATION 1
TYPE 1 672.474 0 503.805 XINC 0.001
TYPE 1 675.777 0 508.815 XINC 0.001
TYPE 1 677.978 0 512.155 XINC 0.001
TYPE 1 681.28 0 517.164 XINC 0.001
TYPE 1 684.583 0 522.174 XINC 0.001
TYPE 1 687.885 0 527.183 XINC 0.001
TYPE 2 660.73 0 511.426 XINC 0.001
TYPE 2 664.033 0 516.436 XINC 0.001
TYPE 2 666.235 0 519.776 XINC 0.001
TYPE 2 669.537 0 524.786 XINC 0.001
TYPE 2 672.84 0 529.796 XINC 0.001
TYPE 2 676.143 0 534.806 XINC 0.001
TYPE 3 648.878 0 518.878 XINC 0.001
TYPE 3 652.182 0 523.889 XINC 0.001
TYPE 3 654.384 0 527.23 XINC 0.001
TYPE 3 657.688 0 532.242 XINC 0.001
TYPE 3 660.991 0 537.253 XINC 0.001
TYPE 3 664.295 0 542.265 XINC 0.001
LOAD GENERATION 1
TYPE 1 674.976 0 502.15 XINC 0.001
TYPE 1 678.294 0 507.15 XINC 0.001
TYPE 1 680.506 0 510.483 XINC 0.001
TYPE 1 683.824 0 515.482 XINC 0.001
TYPE 1 687.141 0 520.481 XINC 0.001
TYPE 1 690.459 0 525.48 XINC 0.001
TYPE 2 663.256 0 509.808 XINC 0.001
TYPE 2 666.574 0 514.807 XINC 0.001
TYPE 2 668.786 0 518.141 XINC 0.001
TYPE 2 672.104 0 523.14 XINC 0.001
TYPE 2 675.422 0 528.14 XINC 0.001
TYPE 2 678.74 0 533.14 XINC 0.001
TYPE 3 651.427 0 517.295 XINC 0.001
TYPE 3 654.746 0 522.297 XINC 0.001
TYPE 3 656.959 0 525.631 XINC 0.001
TYPE 3 660.278 0 530.632 XINC 0.001
TYPE 3 663.597 0 535.633 XINC 0.001
TYPE 3 666.916 0 540.635 XINC 0.001
LOAD GENERATION 1
TYPE 1 677.474 0 500.488 XINC 0.001
TYPE 1 680.807 0 505.477 XINC 0.001
TYPE 1 683.029 0 508.803 XINC 0.001
TYPE 1 686.362 0 513.792 XINC 0.001
TYPE 1 689.695 0 518.781 XINC 0.001
TYPE 1 693.028 0 523.77 XINC 0.001
TYPE 2 665.777 0 508.181 XINC 0.001
TYPE 2 669.11 0 513.17 XINC 0.001
TYPE 2 671.333 0 516.497 XINC 0.001
TYPE 2 674.666 0 521.486 XINC 0.001
TYPE 2 678 0 526.476 XINC 0.001
TYPE 2 681.333 0 531.465 XINC 0.001
TYPE 3 653.971 0 515.705 XINC 0.001
TYPE 3 657.305 0 520.696 XINC 0.001
TYPE 3 659.528 0 524.024 XINC 0.001
TYPE 3 662.863 0 529.015 XINC 0.001
TYPE 3 666.197 0 534.006 XINC 0.001
TYPE 3 669.531 0 538.997 XINC 0.001
LOAD GENERATION 1
TYPE 1 679.965 0 498.817 XINC 0.001
TYPE 1 683.314 0 503.796 XINC 0.001
TYPE 1 685.546 0 507.115 XINC 0.001
TYPE 1 688.895 0 512.094 XINC 0.001
TYPE 1 692.243 0 517.073 XINC 0.001
TYPE 1 695.592 0 522.051 XINC 0.001

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TYPE 2 668.293 0 506.547 XINC 0.001
TYPE 2 671.641 0 511.526 XINC 0.001
TYPE 2 673.874 0 514.845 XINC 0.001
TYPE 2 677.223 0 519.825 XINC 0.001
TYPE 2 680.572 0 524.804 XINC 0.001
TYPE 2 683.92 0 529.783 XINC 0.001
TYPE 3 656.51 0 514.107 XINC 0.001
TYPE 3 659.86 0 519.088 XINC 0.001
TYPE 3 662.093 0 522.408 XINC 0.001
TYPE 3 665.443 0 527.389 XINC 0.001
TYPE 3 668.792 0 532.37 XINC 0.001
TYPE 3 672.142 0 537.351 XINC 0.001
LOAD GENERATION 1
TYPE 1 682.452 0 497.139 XINC 0.001
TYPE 1 685.816 0 502.108 XINC 0.001
TYPE 1 688.059 0 505.42 XINC 0.001
TYPE 1 691.423 0 510.388 XINC 0.001
TYPE 1 694.786 0 515.357 XINC 0.001
TYPE 1 698.15 0 520.325 XINC 0.001
TYPE 2 670.803 0 504.904 XINC 0.001
TYPE 2 674.167 0 509.873 XINC 0.001
TYPE 2 676.41 0 513.186 XINC 0.001
TYPE 2 679.774 0 518.155 XINC 0.001
TYPE 2 683.139 0 523.124 XINC 0.001
TYPE 2 686.503 0 528.093 XINC 0.001
TYPE 3 659.044 0 512.501 XINC 0.001
TYPE 3 662.409 0 517.472 XINC 0.001
TYPE 3 664.652 0 520.785 XINC 0.001
TYPE 3 668.018 0 525.756 XINC 0.001
TYPE 3 671.383 0 530.726 XINC 0.001
TYPE 3 674.748 0 535.696 XINC 0.001
LOAD GENERATION 1
TYPE 1 684.934 0 495.454 XINC 0.001
TYPE 1 688.313 0 500.411 XINC 0.001
TYPE 1 690.566 0 503.717 XINC 0.001
TYPE 1 693.945 0 508.675 XINC 0.001
TYPE 1 697.324 0 513.633 XINC 0.001
TYPE 1 700.703 0 518.591 XINC 0.001
TYPE 2 673.309 0 503.255 XINC 0.001
TYPE 2 676.688 0 508.213 XINC 0.001
TYPE 2 678.941 0 511.519 XINC 0.001
TYPE 2 682.321 0 516.477 XINC 0.001
TYPE 2 685.7 0 521.436 XINC 0.001
TYPE 2 689.08 0 526.394 XINC 0.001
TYPE 3 661.573 0 510.888 XINC 0.001
TYPE 3 664.953 0 515.848 XINC 0.001
TYPE 3 667.207 0 519.154 XINC 0.001
TYPE 3 670.587 0 524.114 XINC 0.001
TYPE 3 673.968 0 529.074 XINC 0.001
TYPE 3 677.348 0 534.034 XINC 0.001
LOAD GENERATION 1
TYPE 1 687.41 0 493.76 XINC 0.001
TYPE 1 690.805 0 498.708 XINC 0.001
TYPE 1 693.068 0 502.006 XINC 0.001
TYPE 1 696.462 0 506.954 XINC 0.001
TYPE 1 699.856 0 511.901 XINC 0.001
TYPE 1 703.251 0 516.849 XINC 0.001
TYPE 2 675.809 0 501.597 XINC 0.001
TYPE 2 679.204 0 506.545 XINC 0.001
TYPE 2 681.467 0 509.844 XINC 0.001
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TYPE 2 691.652 0 524.688 XINC 0.001
TYPE 3 664.097 0 509.266 XINC 0.001
TYPE 3 667.493 0 514.216 XINC 0.001
TYPE 3 669.757 0 517.516 XINC 0.001
TYPE 3 673.152 0 522.465 XINC 0.001
TYPE 3 676.548 0 527.415 XINC 0.001
TYPE 3 679.944 0 532.364 XINC 0.001
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TYPE 1 695.564 0 500.288 XINC 0.001
TYPE 1 698.974 0 505.225 XINC 0.001
TYPE 1 702.383 0 510.162 XINC 0.001
TYPE 1 705.793 0 515.099 XINC 0.001
TYPE 2 678.305 0 499.932 XINC 0.001
TYPE 2 681.715 0 504.869 XINC 0.001
TYPE 2 683.988 0 508.161 XINC 0.001

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TYPE 2 687.398 0 513.099 XINC 0.001
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TYPE 3 666.616 0 507.637 XINC 0.001
TYPE 3 670.027 0 512.576 XINC 0.001
TYPE 3 672.301 0 515.869 XINC 0.001
TYPE 3 675.712 0 520.808 XINC 0.001
TYPE 3 679.123 0 525.747 XINC 0.001
TYPE 3 682.534 0 530.686 XINC 0.001
LOAD GENERATION 1
TYPE 1 692.347 0 490.351 XINC 0.001
TYPE 1 695.772 0 495.277 XINC 0.001
TYPE 1 698.055 0 498.561 XINC 0.001
TYPE 1 701.48 0 503.488 XINC 0.001
TYPE 1 704.905 0 508.414 XINC 0.001
TYPE 1 708.33 0 513.341 XINC 0.001
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TYPE 2 684.22 0 503.186 XINC 0.001
TYPE 2 686.504 0 506.471 XINC 0.001
TYPE 2 689.929 0 511.398 XINC 0.001
TYPE 2 693.354 0 516.325 XINC 0.001
TYPE 2 696.779 0 521.252 XINC 0.001
TYPE 3 669.13 0 506 XINC 0.001
TYPE 3 672.556 0 510.929 XINC 0.001
TYPE 3 674.84 0 514.214 XINC 0.001
TYPE 3 678.267 0 519.143 XINC 0.001
TYPE 3 681.693 0 524.071 XINC 0.001
TYPE 3 685.119 0 529 XINC 0.001
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TYPE 1 694.808 0 488.634 XINC 0.001
TYPE 1 698.248 0 493.55 XINC 0.001
TYPE 1 700.541 0 496.828 XINC 0.001
TYPE 1 703.981 0 501.743 XINC 0.001
TYPE 1 707.421 0 506.659 XINC 0.001
TYPE 1 710.861 0 511.575 XINC 0.001
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TYPE 2 686.72 0 501.495 XINC 0.001
TYPE 2 689.014 0 504.772 XINC 0.001
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TYPE 3 675.08 0 509.273 XINC 0.001
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TYPE 3 680.816 0 517.47 XINC 0.001
TYPE 3 684.257 0 522.388 XINC 0.001
TYPE 3 687.699 0 527.306 XINC 0.001
LOAD GENERATION 1
TYPE 1 697.263 0 486.91 XINC 0.001
TYPE 1 700.718 0 491.816 XINC 0.001
TYPE 1 703.022 0 495.086 XINC 0.001
TYPE 1 706.477 0 499.991 XINC 0.001
TYPE 1 709.932 0 504.897 XINC 0.001
TYPE 1 713.387 0 509.802 XINC 0.001
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TYPE 2 689.215 0 499.796 XINC 0.001
TYPE 2 691.519 0 503.066 XINC 0.001
TYPE 2 694.975 0 507.972 XINC 0.001
TYPE 2 698.43 0 512.878 XINC 0.001
TYPE 2 701.886 0 517.784 XINC 0.001
TYPE 3 674.143 0 502.703 XINC 0.001
TYPE 3 677.6 0 507.61 XINC 0.001
TYPE 3 679.904 0 510.882 XINC 0.001
TYPE 3 683.36 0 515.789 XINC 0.001
TYPE 3 686.817 0 520.696 XINC 0.001
TYPE 3 690.273 0 525.604 XINC 0.001
LOAD GENERATION 1
TYPE 1 699.713 0 485.179 XINC 0.001
TYPE 1 703.183 0 490.074 XINC 0.001
TYPE 1 705.497 0 493.337 XINC 0.001
TYPE 1 708.967 0 498.231 XINC 0.001
TYPE 1 712.438 0 503.126 XINC 0.001
TYPE 1 715.908 0 508.021 XINC 0.001
TYPE 2 688.235 0 493.194 XINC 0.001
TYPE 2 691.705 0 498.089 XINC 0.001
TYPE 2 694.019 0 501.352 XINC 0.001
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TYPE 2 700.96 0 511.143 XINC 0.001
TYPE 2 704.431 0 516.038 XINC 0.001

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TYPE 3 676.642 0 501.043 XINC 0.001
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TYPE 3 689.371 0 518.997 XINC 0.001
TYPE 3 692.843 0 523.894 XINC 0.001
LOAD GENERATION 1
TYPE 1 702.158 0 483.44 XINC 0.001
TYPE 1 705.643 0 488.324 XINC 0.001
TYPE 1 707.967 0 491.58 XINC 0.001
TYPE 1 711.452 0 496.464 XINC 0.001
TYPE 1 714.937 0 501.348 XINC 0.001
TYPE 1 718.423 0 506.232 XINC 0.001
TYPE 2 690.704 0 491.49 XINC 0.001
TYPE 2 694.19 0 496.375 XINC 0.001
TYPE 2 696.513 0 499.631 XINC 0.001
TYPE 2 699.999 0 504.515 XINC 0.001
TYPE 2 703.485 0 509.4 XINC 0.001
TYPE 2 706.971 0 514.284 XINC 0.001
TYPE 3 679.135 0 499.375 XINC 0.001
TYPE 3 682.622 0 504.261 XINC 0.001
TYPE 3 684.947 0 507.518 XINC 0.001
TYPE 3 688.433 0 512.404 XINC 0.001
TYPE 3 691.92 0 517.29 XINC 0.001
TYPE 3 695.407 0 522.176 XINC 0.001
LOAD GENERATION 1
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TYPE 1 708.097 0 486.567 XINC 0.001
TYPE 1 710.431 0 489.816 XINC 0.001
TYPE 1 713.931 0 494.689 XINC 0.001
TYPE 1 717.432 0 499.562 XINC 0.001
TYPE 1 720.932 0 504.435 XINC 0.001
TYPE 2 693.168 0 489.779 XINC 0.001
TYPE 2 696.669 0 494.653 XINC 0.001
TYPE 2 699.003 0 497.902 XINC 0.001
TYPE 2 702.503 0 502.776 XINC 0.001
TYPE 2 706.004 0 507.649 XINC 0.001
TYPE 2 709.505 0 512.523 XINC 0.001
TYPE 3 681.624 0 497.699 XINC 0.001
TYPE 3 685.126 0 502.575 XINC 0.001
TYPE 3 687.46 0 505.825 XINC 0.001
TYPE 3 690.962 0 510.7 XINC 0.001
TYPE 3 694.464 0 515.575 XINC 0.001
TYPE 3 697.965 0 520.45 XINC 0.001
LOAD GENERATION 1
TYPE 1 707.031 0 479.94 XINC 0.001
TYPE 1 710.546 0 484.802 XINC 0.001
TYPE 1 712.89 0 488.044 XINC 0.001
TYPE 1 716.405 0 492.906 XINC 0.001
TYPE 1 719.921 0 497.768 XINC 0.001
TYPE 1 723.436 0 502.631 XINC 0.001
TYPE 2 695.627 0 488.061 XINC 0.001
TYPE 2 699.143 0 492.923 XINC 0.001
TYPE 2 701.486 0 496.165 XINC 0.001
TYPE 2 705.002 0 501.028 XINC 0.001
TYPE 2 708.518 0 505.891 XINC 0.001
TYPE 2 712.034 0 510.754 XINC 0.001
TYPE 3 684.107 0 496.016 XINC 0.001
TYPE 3 687.624 0 500.881 XINC 0.001
TYPE 3 689.969 0 504.123 XINC 0.001
TYPE 3 693.485 0 508.988 XINC 0.001
TYPE 3 697.002 0 513.852 XINC 0.001
TYPE 3 700.519 0 518.716 XINC 0.001
LOAD GENERATION 1
TYPE 1 709.459 0 478.178 XINC 0.001
TYPE 1 712.99 0 483.03 XINC 0.001
TYPE 1 715.343 0 486.264 XINC 0.001
TYPE 1 718.874 0 491.116 XINC 0.001
TYPE 1 722.404 0 495.967 XINC 0.001
TYPE 1 725.934 0 500.818 XINC 0.001
TYPE 2 698.08 0 486.334 XINC 0.001
TYPE 2 701.611 0 491.186 XINC 0.001
TYPE 2 703.965 0 494.421 XINC 0.001
TYPE 2 707.496 0 499.273 XINC 0.001
TYPE 2 711.027 0 504.125 XINC 0.001
TYPE 2 714.557 0 508.977 XINC 0.001
TYPE 3 686.585 0 494.325 XINC 0.001
TYPE 3 690.117 0 499.179 XINC 0.001
TYPE 3 692.472 0 502.415 XINC 0.001

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TYPE 3 696.003 0 507.268 XINC 0.001
TYPE 3 699.535 0 512.121 XINC 0.001
TYPE 3 703.067 0 516.975 XINC 0.001
LOAD GENERATION 1
TYPE 1 711.882 0 476.41 XINC 0.001
TYPE 1 715.428 0 481.25 XINC 0.001
TYPE 1 717.791 0 484.477 XINC 0.001
TYPE 1 721.337 0 489.318 XINC 0.001
TYPE 1 724.882 0 494.158 XINC 0.001
TYPE 1 728.427 0 498.999 XINC 0.001
TYPE 2 700.529 0 484.6 XINC 0.001
TYPE 2 704.074 0 489.441 XINC 0.001
TYPE 2 706.438 0 492.669 XINC 0.001
TYPE 2 709.984 0 497.51 XINC 0.001
TYPE 2 713.529 0 502.351 XINC 0.001
TYPE 2 717.075 0 507.192 XINC 0.001
TYPE 3 689.058 0 492.627 XINC 0.001
TYPE 3 692.605 0 497.47 XINC 0.001
TYPE 3 694.969 0 500.698 XINC 0.001
TYPE 3 698.516 0 505.54 XINC 0.001
TYPE 3 702.063 0 510.383 XINC 0.001
TYPE 3 705.61 0 515.225 XINC 0.001
LOAD GENERATION 1
TYPE 1 714.3 0 474.633 XINC 0.001
TYPE 1 717.86 0 479.463 XINC 0.001
TYPE 1 720.234 0 482.682 XINC 0.001
TYPE 1 723.794 0 487.512 XINC 0.001
TYPE 1 727.354 0 492.342 XINC 0.001
TYPE 1 730.914 0 497.171 XINC 0.001
TYPE 2 702.972 0 482.859 XINC 0.001
TYPE 2 706.532 0 487.689 XINC 0.001
TYPE 2 708.906 0 490.909 XINC 0.001
TYPE 2 712.466 0 495.739 XINC 0.001
TYPE 2 716.027 0 500.569 XINC 0.001
TYPE 2 719.588 0 505.399 XINC 0.001
TYPE 3 691.526 0 490.921 XINC 0.001
TYPE 3 695.088 0 495.753 XINC 0.001
TYPE 3 697.462 0 498.974 XINC 0.001
TYPE 3 701.024 0 503.805 XINC 0.001
TYPE 3 704.585 0 508.637 XINC 0.001
TYPE 3 708.147 0 513.468 XINC 0.001
LOAD GENERATION 1
TYPE 1 716.712 0 472.849 XINC 0.001
TYPE 1 720.287 0 477.668 XINC 0.001
TYPE 1 722.67 0 480.88 XINC 0.001
TYPE 1 726.246 0 485.699 XINC 0.001
TYPE 1 729.821 0 490.517 XINC 0.001
TYPE 1 733.396 0 495.336 XINC 0.001
TYPE 2 705.409 0 481.11 XINC 0.001
TYPE 2 708.984 0 485.929 XINC 0.001
TYPE 2 711.368 0 489.142 XINC 0.001
TYPE 2 714.944 0 493.961 XINC 0.001
TYPE 2 718.519 0 498.78 XINC 0.001
TYPE 2 722.094 0 503.599 XINC 0.001
TYPE 3 693.988 0 489.207 XINC 0.001
TYPE 3 697.565 0 494.028 XINC 0.001
TYPE 3 699.949 0 497.242 XINC 0.001
TYPE 3 703.526 0 502.062 XINC 0.001
TYPE 3 707.102 0 506.883 XINC 0.001
TYPE 3 710.679 0 511.703 XINC 0.001
LOAD GENERATION 1
TYPE 1 719.118 0 471.058 XINC 0.001
TYPE 1 722.708 0 475.866 XINC 0.001
TYPE 1 725.102 0 479.071 XINC 0.001
TYPE 1 728.692 0 483.878 XINC 0.001
TYPE 1 732.282 0 488.686 XINC 0.001
TYPE 1 735.872 0 493.493 XINC 0.001
TYPE 2 707.841 0 479.354 XINC 0.001
TYPE 2 711.431 0 484.162 XINC 0.001
TYPE 2 713.825 0 487.367 XINC 0.001
TYPE 2 717.415 0 492.175 XINC 0.001
TYPE 2 721.006 0 496.983 XINC 0.001
TYPE 2 724.596 0 501.791 XINC 0.001
TYPE 3 696.445 0 487.486 XINC 0.001
TYPE 3 700.037 0 492.295 XINC 0.001
TYPE 3 702.431 0 495.502 XINC 0.001
TYPE 3 706.022 0 500.311 XINC 0.001
TYPE 3 709.614 0 505.121 XINC 0.001
TYPE 3 713.205 0 509.93 XINC 0.001

```

LOAD GENERATION 1  
 TYPE 1 721.519 0 469.259 XINC 0.001  
 TYPE 1 725.124 0 474.056 XINC 0.001  
 TYPE 1 727.527 0 477.253 XINC 0.001  
 TYPE 1 731.132 0 482.05 XINC 0.001  
 TYPE 1 734.737 0 486.846 XINC 0.001  
 TYPE 1 738.342 0 491.643 XINC 0.001  
 TYPE 2 710.268 0 477.59 XINC 0.001  
 TYPE 2 713.873 0 482.387 XINC 0.001  
 TYPE 2 716.276 0 485.584 XINC 0.001  
 TYPE 2 719.881 0 490.381 XINC 0.001  
 TYPE 2 723.486 0 495.178 XINC 0.001  
 TYPE 2 727.091 0 499.975 XINC 0.001  
 TYPE 3 698.897 0 485.757 XINC 0.001  
 TYPE 3 702.503 0 490.556 XINC 0.001  
 TYPE 3 704.907 0 493.754 XINC 0.001  
 TYPE 3 708.514 0 498.553 XINC 0.001  
 TYPE 3 712.12 0 503.351 XINC 0.001  
 TYPE 3 715.726 0 508.15 XINC 0.001

LOAD GENERATION 1  
 TYPE 1 723.915 0 467.453 XINC 0.001  
 TYPE 1 727.534 0 472.239 XINC 0.001  
 TYPE 1 729.947 0 475.429 XINC 0.001  
 TYPE 1 733.567 0 480.214 XINC 0.001  
 TYPE 1 737.186 0 484.999 XINC 0.001  
 TYPE 1 740.806 0 489.785 XINC 0.001  
 TYPE 2 712.689 0 475.818 XINC 0.001  
 TYPE 2 716.309 0 480.604 XINC 0.001  
 TYPE 2 718.722 0 483.795 XINC 0.001  
 TYPE 2 722.342 0 488.58 XINC 0.001  
 TYPE 2 725.962 0 493.366 XINC 0.001  
 TYPE 2 729.582 0 498.152 XINC 0.001  
 TYPE 3 701.344 0 484.021 XINC 0.001  
 TYPE 3 704.965 0 488.808 XINC 0.001  
 TYPE 3 707.378 0 492 XINC 0.001  
 TYPE 3 710.999 0 496.787 XINC 0.001  
 TYPE 3 714.62 0 501.574 XINC 0.001  
 TYPE 3 718.241 0 506.361 XINC 0.001

LOAD GENERATION 1  
 TYPE 1 726.305 0 465.64 XINC 0.001  
 TYPE 1 729.939 0 470.414 XINC 0.001  
 TYPE 1 732.362 0 473.597 XINC 0.001  
 TYPE 1 735.996 0 478.371 XINC 0.001  
 TYPE 1 739.63 0 483.145 XINC 0.001  
 TYPE 1 743.265 0 487.919 XINC 0.001  
 TYPE 2 715.104 0 474.039 XINC 0.001  
 TYPE 2 718.739 0 478.814 XINC 0.001  
 TYPE 2 721.162 0 481.997 XINC 0.001  
 TYPE 2 724.797 0 486.772 XINC 0.001  
 TYPE 2 728.431 0 491.546 XINC 0.001  
 TYPE 2 732.066 0 496.321 XINC 0.001  
 TYPE 3 703.785 0 482.277 XINC 0.001  
 TYPE 3 707.42 0 487.053 XINC 0.001  
 TYPE 3 709.844 0 490.237 XINC 0.001  
 TYPE 3 713.48 0 495.013 XINC 0.001  
 TYPE 3 717.115 0 499.789 XINC 0.001  
 TYPE 3 720.751 0 504.565 XINC 0.001

LOAD GENERATION 1  
 TYPE 1 728.689 0 463.819 XINC 0.001  
 TYPE 1 732.338 0 468.582 XINC 0.001  
 TYPE 1 734.771 0 471.757 XINC 0.001  
 TYPE 1 738.42 0 476.52 XINC 0.001  
 TYPE 1 742.069 0 481.283 XINC 0.001  
 TYPE 1 745.718 0 486.046 XINC 0.001  
 TYPE 2 717.515 0 472.253 XINC 0.001  
 TYPE 2 721.164 0 477.016 XINC 0.001  
 TYPE 2 723.597 0 480.192 XINC 0.001  
 TYPE 2 727.246 0 484.955 XINC 0.001  
 TYPE 2 730.896 0 489.719 XINC 0.001  
 TYPE 2 734.545 0 494.482 XINC 0.001  
 TYPE 3 706.22 0 480.525 XINC 0.001  
 TYPE 3 709.871 0 485.29 XINC 0.001  
 TYPE 3 712.304 0 488.467 XINC 0.001  
 TYPE 3 715.955 0 493.232 XINC 0.001  
 TYPE 3 719.605 0 497.996 XINC 0.001  
 TYPE 3 723.256 0 502.761 XINC 0.001

LOAD GENERATION 1  
 TYPE 1 731.068 0 461.991 XINC 0.001  
 TYPE 1 734.731 0 466.742 XINC 0.001

TYPE 1 737.174 0 469.91 XINC 0.001  
TYPE 1 740.837 0 474.662 XINC 0.001  
TYPE 1 744.501 0 479.413 XINC 0.001  
TYPE 1 748.165 0 484.165 XINC 0.001  
TYPE 2 719.919 0 470.459 XINC 0.001  
TYPE 2 723.583 0 475.211 XINC 0.001  
TYPE 2 726.026 0 478.379 XINC 0.001  
TYPE 2 729.69 0 483.132 XINC 0.001  
TYPE 2 733.354 0 487.884 XINC 0.001  
TYPE 2 737.018 0 492.636 XINC 0.001  
TYPE 3 708.651 0 478.766 XINC 0.001  
TYPE 3 712.316 0 483.52 XINC 0.001  
TYPE 3 714.759 0 486.689 XINC 0.001  
TYPE 3 718.424 0 491.443 XINC 0.001  
TYPE 3 722.089 0 496.196 XINC 0.001  
TYPE 3 725.754 0 500.95 XINC 0.001  
LOAD GENERATION 1  
TYPE 1 733.441 0 460.155 XINC 0.001  
TYPE 1 737.119 0 464.896 XINC 0.001  
TYPE 1 739.571 0 468.056 XINC 0.001  
TYPE 1 743.249 0 472.796 XINC 0.001  
TYPE 1 746.928 0 477.536 XINC 0.001  
TYPE 1 750.606 0 482.277 XINC 0.001  
TYPE 2 722.319 0 468.658 XINC 0.001  
TYPE 2 725.997 0 473.399 XINC 0.001  
TYPE 2 728.45 0 476.559 XINC 0.001  
TYPE 2 732.128 0 481.3 XINC 0.001  
TYPE 2 735.807 0 486.041 XINC 0.001  
TYPE 2 739.486 0 490.782 XINC 0.001  
TYPE 3 711.075 0 477 XINC 0.001  
TYPE 3 714.755 0 481.742 XINC 0.001  
TYPE 3 717.208 0 484.904 XINC 0.001  
TYPE 3 720.888 0 489.646 XINC 0.001  
TYPE 3 724.568 0 494.388 XINC 0.001  
TYPE 3 728.247 0 499.13 XINC 0.001  
PERFORM ANALYSIS  
FINISH



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# STAAD MODEL INPUT

- EXAMPLE LL (MAXIMIZING FASCIA STRINGER)

SLAVE	RIGID	MASTER	1289	JOINT	409
SLAVE	RIGID	MASTER	1337	JOINT	467
SLAVE	RIGID	MASTER	1290	JOINT	410
SLAVE	RIGID	MASTER	1291	JOINT	411
SLAVE	RIGID	MASTER	1339	JOINT	486
SLAVE	RIGID	MASTER	1292	JOINT	412
SLAVE	RIGID	MASTER	1293	JOINT	413
SLAVE	RIGID	MASTER	1342	JOINT	508
SLAVE	RIGID	MASTER	1294	JOINT	414
SLAVE	RIGID	MASTER	1295	JOINT	415
SLAVE	RIGID	MASTER	1344	JOINT	511
SLAVE	RIGID	MASTER	1346	JOINT	583
SLAVE	RIGID	MASTER	1296	JOINT	416
SLAVE	RIGID	MASTER	1351	JOINT	588
SLAVE	RIGID	MASTER	1347	JOINT	584
SLAVE	RIGID	MASTER	1297	JOINT	417
SLAVE	RIGID	MASTER	1349	JOINT	586
SLAVE	RIGID	MASTER	1298	JOINT	419
SLAVE	RIGID	MASTER	1299	JOINT	420
SLAVE	RIGID	MASTER	1354	JOINT	600
SLAVE	RIGID	MASTER	1300	JOINT	421
SLAVE	RIGID	MASTER	1301	JOINT	422
SLAVE	RIGID	MASTER	1355	JOINT	623
SLAVE	RIGID	MASTER	1302	JOINT	423
SLAVE	RIGID	MASTER	1303	JOINT	424
SLAVE	RIGID	MASTER	1358	JOINT	633
SLAVE	RIGID	MASTER	1304	JOINT	425
SLAVE	RIGID	MASTER	1305	JOINT	426
SLAVE	RIGID	MASTER	1360	JOINT	688
SLAVE	RIGID	MASTER	1306	JOINT	427
SLAVE	RIGID	MASTER	1307	JOINT	428
SLAVE	RIGID	MASTER	1362	JOINT	696
SLAVE	RIGID	MASTER	1363	JOINT	704
SLAVE	RIGID	MASTER	1308	JOINT	429
SLAVE	RIGID	MASTER	1366	JOINT	721
SLAVE	RIGID	MASTER	1309	JOINT	430
SLAVE	RIGID	MASTER	1368	JOINT	737
SLAVE	RIGID	MASTER	1369	JOINT	745
SLAVE	RIGID	MASTER	1310	JOINT	431
SLAVE	RIGID	MASTER	1372	JOINT	762
SLAVE	RIGID	MASTER	1374	JOINT	771
SLAVE	RIGID	MASTER	1376	JOINT	824
SLAVE	RIGID	MASTER	1378	JOINT	826
SLAVE	RIGID	MASTER	1379	JOINT	827
SLAVE	RIGID	MASTER	1311	JOINT	432
SLAVE	RIGID	MASTER	1382	JOINT	830
SLAVE	RIGID	MASTER	1381	JOINT	829
SLAVE	RIGID	MASTER	1380	JOINT	828
SLAVE	RIGID	MASTER	1334	JOINT	456
SLAVE	RIGID	MASTER	1377	JOINT	825
SLAVE	RIGID	MASTER	1375	JOINT	823
SLAVE	RIGID	MASTER	1373	JOINT	765
SLAVE	RIGID	MASTER	1371	JOINT	756
SLAVE	RIGID	MASTER	1370	JOINT	748
SLAVE	RIGID	MASTER	1333	JOINT	455
SLAVE	RIGID	MASTER	1367	JOINT	731
SLAVE	RIGID	MASTER	1332	JOINT	454
SLAVE	RIGID	MASTER	1365	JOINT	715
SLAVE	RIGID	MASTER	1364	JOINT	707
SLAVE	RIGID	MASTER	1331	JOINT	453
SLAVE	RIGID	MASTER	1361	JOINT	690
SLAVE	RIGID	MASTER	1330	JOINT	451
SLAVE	RIGID	MASTER	1329	JOINT	450
SLAVE	RIGID	MASTER	1359	JOINT	687
SLAVE	RIGID	MASTER	1328	JOINT	449
SLAVE	RIGID	MASTER	1327	JOINT	448
SLAVE	RIGID	MASTER	1357	JOINT	632
SLAVE	RIGID	MASTER	1326	JOINT	447
SLAVE	RIGID	MASTER	1325	JOINT	446
SLAVE	RIGID	MASTER	1356	JOINT	624
SLAVE	RIGID	MASTER	1324	JOINT	445
SLAVE	RIGID	MASTER	1323	JOINT	444
SLAVE	RIGID	MASTER	1353	JOINT	594
SLAVE	RIGID	MASTER	1322	JOINT	443
SLAVE	RIGID	MASTER	1321	JOINT	442
SLAVE	RIGID	MASTER	1348	JOINT	585
SLAVE	RIGID	MASTER	1352	JOINT	589
SLAVE	RIGID	MASTER	1336	JOINT	459
SLAVE	RIGID	MASTER	1350	JOINT	587

SLAVE RIGID MASTER 1320 JOINT 441  
SLAVE RIGID MASTER 1345 JOINT 582  
SLAVE RIGID MASTER 1343 JOINT 510  
SLAVE RIGID MASTER 1319 JOINT 440  
SLAVE RIGID MASTER 1318 JOINT 439  
SLAVE RIGID MASTER 1341 JOINT 502  
SLAVE RIGID MASTER 1317 JOINT 438  
SLAVE RIGID MASTER 1316 JOINT 437  
SLAVE RIGID MASTER 1340 JOINT 487  
SLAVE RIGID MASTER 1315 JOINT 436  
SLAVE RIGID MASTER 1314 JOINT 435  
SLAVE RIGID MASTER 1338 JOINT 468  
SLAVE RIGID MASTER 1313 JOINT 434  
DEFINE MOVING LOAD  
TYPE 1 LOAD 4  
DIST 0  
TYPE 2 LOAD 16  
DIST 0  
TYPE 3 LOAD 16  
DIST 0  
LOAD GENERATION 55  
TYPE 1 -1.011 0 664.41 XINC 3  
TYPE 1 -1.011 0 670.41 XINC 3  
TYPE 1 -1.011 0 674.41 XINC 3  
TYPE 1 -1.011 0 680.41 XINC 3  
TYPE 2 -15.011 0 664.41 XINC 3  
TYPE 2 -15.011 0 670.41 XINC 3  
TYPE 2 -15.011 0 674.41 XINC 3  
TYPE 2 -15.011 0 680.41 XINC 3  
TYPE 3 -29.011 0 664.41 XINC 3  
TYPE 3 -29.011 0 670.41 XINC 3  
TYPE 3 -29.011 0 674.41 XINC 3  
TYPE 3 -29.011 0 680.41 XINC 3  
LOAD GENERATION 190  
TYPE 1 734.185 0 459.58 XINC 3 ZINC -2.323  
TYPE 1 737.858 0 464.324 XINC 3 ZINC -2.323  
TYPE 1 740.307 0 467.487 XINC 3 ZINC -2.323  
TYPE 1 743.98 0 472.231 XINC 3 ZINC -2.323  
TYPE 2 723.115 0 468.152 XINC 3 ZINC -2.323  
TYPE 2 726.788 0 472.896 XINC 3 ZINC -2.323  
TYPE 2 729.237 0 476.058 XINC 3 ZINC -2.323  
TYPE 2 732.911 0 480.802 XINC 3 ZINC -2.323  
TYPE 3 712.046 0 476.723 XINC 3 ZINC -2.323  
TYPE 3 715.719 0 481.467 XINC 3 ZINC -2.323  
TYPE 3 718.168 0 484.63 XINC 3 ZINC -2.323  
TYPE 3 721.841 0 489.374 XINC 3 ZINC -2.323  
LOAD GENERATION 1  
TYPE 1 137.033 0 664.41 XINC 0.001  
TYPE 1 137.033 0 670.41 XINC 0.001  
TYPE 1 137.033 0 674.41 XINC 0.001  
TYPE 1 137.033 0 680.41 XINC 0.001  
TYPE 2 123.033 0 664.41 XINC 0.001  
TYPE 2 123.033 0 670.41 XINC 0.001  
TYPE 2 123.033 0 674.41 XINC 0.001  
TYPE 2 123.033 0 680.41 XINC 0.001  
TYPE 3 109.033 0 664.41 XINC 0.001  
TYPE 3 109.033 0 670.41 XINC 0.001  
TYPE 3 109.033 0 674.41 XINC 0.001  
TYPE 3 109.033 0 680.41 XINC 0.001  
LOAD GENERATION 1  
TYPE 1 140.033 0 664.41 XINC 0.001  
TYPE 1 140.051 0 670.41 XINC 0.001  
TYPE 1 140.064 0 674.41 XINC 0.001  
TYPE 1 140.082 0 680.41 XINC 0.001  
TYPE 2 126.033 0 664.41 XINC 0.001  
TYPE 2 126.033 0 670.41 XINC 0.001  
TYPE 2 126.033 0 674.41 XINC 0.001  
TYPE 2 126.033 0 680.41 XINC 0.001  
TYPE 3 112.033 0 664.41 XINC 0.001  
TYPE 3 112.033 0 670.41 XINC 0.001  
TYPE 3 112.033 0 674.41 XINC 0.001  
TYPE 3 112.033 0 680.41 XINC 0.001  
LOAD GENERATION 1  
TYPE 1 143.033 0 664.391 XINC 0.001  
TYPE 1 143.07 0 670.391 XINC 0.001  
TYPE 1 143.095 0 674.391 XINC 0.001  
TYPE 1 143.132 0 680.391 XINC 0.001  
TYPE 2 129.033 0 664.41 XINC 0.001  
TYPE 2 129.033 0 670.41 XINC 0.001

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TYPE 2 129.033 0 674.41 XINC 0.001
TYPE 2 129.033 0 680.41 XINC 0.001
TYPE 3 115.033 0 664.41 XINC 0.001
TYPE 3 115.033 0 670.41 XINC 0.001
TYPE 3 115.033 0 674.41 XINC 0.001
TYPE 3 115.033 0 680.41 XINC 0.001
LOAD GENERATION 1
TYPE 1 146.033 0 664.368 XINC 0.001
TYPE 1 146.088 0 670.368 XINC 0.001
TYPE 1 146.125 0 674.368 XINC 0.001
TYPE 1 146.181 0 680.368 XINC 0.001
TYPE 2 132.033 0 664.41 XINC 0.001
TYPE 2 132.033 0 670.41 XINC 0.001
TYPE 2 132.033 0 674.41 XINC 0.001
TYPE 2 132.033 0 680.41 XINC 0.001
TYPE 3 118.033 0 664.41 XINC 0.001
TYPE 3 118.033 0 670.41 XINC 0.001
TYPE 3 118.033 0 674.41 XINC 0.001
TYPE 3 118.033 0 680.41 XINC 0.001
LOAD GENERATION 1
TYPE 1 149.033 0 664.336 XINC 0.001
TYPE 1 149.107 0 670.336 XINC 0.001
TYPE 1 149.156 0 674.335 XINC 0.001
TYPE 1 149.23 0 680.335 XINC 0.001
TYPE 2 135.033 0 664.41 XINC 0.001
TYPE 2 135.033 0 670.41 XINC 0.001
TYPE 2 135.033 0 674.41 XINC 0.001
TYPE 2 135.033 0 680.41 XINC 0.001
TYPE 3 121.033 0 664.41 XINC 0.001
TYPE 3 121.033 0 670.41 XINC 0.001
TYPE 3 121.033 0 674.41 XINC 0.001
TYPE 3 121.033 0 680.41 XINC 0.001
LOAD GENERATION 1
TYPE 1 152.032 0 664.294 XINC 0.001
TYPE 1 152.125 0 670.294 XINC 0.001
TYPE 1 152.187 0 674.293 XINC 0.001
TYPE 1 152.279 0 680.292 XINC 0.001
TYPE 2 138.033 0 664.41 XINC 0.001
TYPE 2 138.033 0 670.41 XINC 0.001
TYPE 2 138.033 0 674.41 XINC 0.001
TYPE 2 138.033 0 680.41 XINC 0.001
TYPE 3 124.033 0 664.41 XINC 0.001
TYPE 3 124.033 0 670.41 XINC 0.001
TYPE 3 124.033 0 674.41 XINC 0.001
TYPE 3 124.033 0 680.41 XINC 0.001
LOAD GENERATION 1
TYPE 1 155.032 0 664.243 XINC 0.001
TYPE 1 155.143 0 670.242 XINC 0.001
TYPE 1 155.217 0 674.242 XINC 0.001
TYPE 1 155.328 0 680.241 XINC 0.001
TYPE 2 141.033 0 664.402 XINC 0.001
TYPE 2 141.144 0 670.401 XINC 0.001
TYPE 2 141.218 0 674.401 XINC 0.001
TYPE 2 141.329 0 680.401 XINC 0.001
TYPE 3 127.033 0 664.41 XINC 0.001
TYPE 3 127.033 0 670.41 XINC 0.001
TYPE 3 127.033 0 674.41 XINC 0.001
TYPE 3 127.033 0 680.41 XINC 0.001
LOAD GENERATION 1
TYPE 1 158.031 0 664.183 XINC 0.001
TYPE 1 158.161 0 670.182 XINC 0.001
TYPE 1 158.247 0 674.181 XINC 0.001
TYPE 1 158.377 0 680.18 XINC 0.001
TYPE 2 144.033 0 664.385 XINC 0.001
TYPE 2 144.162 0 670.384 XINC 0.001
TYPE 2 144.249 0 674.383 XINC 0.001
TYPE 2 144.378 0 680.383 XINC 0.001
TYPE 3 130.033 0 664.41 XINC 0.001
TYPE 3 130.033 0 670.41 XINC 0.001
TYPE 3 130.033 0 674.41 XINC 0.001
TYPE 3 130.033 0 680.41 XINC 0.001
LOAD GENERATION 1
TYPE 1 161.031 0 664.114 XINC 0.001
TYPE 1 161.179 0 670.112 XINC 0.001
TYPE 1 161.277 0 674.111 XINC 0.001
TYPE 1 161.425 0 680.109 XINC 0.001
TYPE 2 147.033 0 664.359 XINC 0.001
TYPE 2 147.181 0 670.357 XINC 0.001
TYPE 2 147.28 0 674.357 XINC 0.001
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TYPE 2 147.428 0 680.355 XINC 0.001  
TYPE 3 133.033 0 664.41 XINC 0.001  
TYPE 3 133.033 0 670.41 XINC 0.001  
TYPE 3 133.033 0 674.41 XINC 0.001  
TYPE 3 133.033 0 680.41 XINC 0.001  
LOAD GENERATION 1  
TYPE 1 164.03 0 664.035 XINC 0.001  
TYPE 1 164.196 0 670.033 XINC 0.001  
TYPE 1 164.307 0 674.031 XINC 0.001  
TYPE 1 164.474 0 680.029 XINC 0.001  
TYPE 2 150.033 0 664.323 XINC 0.001  
TYPE 2 150.199 0 670.321 XINC 0.001  
TYPE 2 150.31 0 674.32 XINC 0.001  
TYPE 2 150.477 0 680.319 XINC 0.001  
TYPE 3 136.033 0 664.41 XINC 0.001  
TYPE 3 136.033 0 670.41 XINC 0.001  
TYPE 3 136.033 0 674.41 XINC 0.001  
TYPE 3 136.033 0 680.41 XINC 0.001  
LOAD GENERATION 1  
TYPE 1 167.028 0 663.948 XINC 0.001  
TYPE 1 167.213 0 669.945 XINC 0.001  
TYPE 1 167.337 0 673.943 XINC 0.001  
TYPE 1 167.522 0 679.94 XINC 0.001  
TYPE 2 153.032 0 664.278 XINC 0.001  
TYPE 2 153.217 0 670.276 XINC 0.001  
TYPE 2 153.341 0 674.275 XINC 0.001  
TYPE 2 153.526 0 680.272 XINC 0.001  
TYPE 3 139.033 0 664.41 XINC 0.001  
TYPE 3 139.033 0 670.41 XINC 0.001  
TYPE 3 139.033 0 674.41 XINC 0.001  
TYPE 3 139.033 0 680.41 XINC 0.001  
LOAD GENERATION 1  
TYPE 1 170.027 0 663.85 XINC 0.001  
TYPE 1 170.23 0 669.847 XINC 0.001  
TYPE 1 170.366 0 673.845 XINC 0.001  
TYPE 1 170.569 0 679.841 XINC 0.001  
TYPE 2 156.032 0 664.224 XINC 0.001  
TYPE 2 156.235 0 670.222 XINC 0.001  
TYPE 2 156.371 0 674.22 XINC 0.001  
TYPE 2 156.574 0 680.217 XINC 0.001  
TYPE 3 142.033 0 664.397 XINC 0.001  
TYPE 3 142.236 0 670.396 XINC 0.001  
TYPE 3 142.372 0 674.396 XINC 0.001  
TYPE 3 142.576 0 680.394 XINC 0.001  
LOAD GENERATION 1  
TYPE 1 173.025 0 663.744 XINC 0.001  
TYPE 1 173.247 0 669.74 XINC 0.001  
TYPE 1 173.395 0 673.737 XINC 0.001  
TYPE 1 173.617 0 679.733 XINC 0.001  
TYPE 2 159.031 0 664.161 XINC 0.001  
TYPE 2 159.253 0 670.158 XINC 0.001  
TYPE 2 159.401 0 674.155 XINC 0.001  
TYPE 2 159.623 0 680.152 XINC 0.001  
TYPE 3 145.033 0 664.377 XINC 0.001  
TYPE 3 145.255 0 670.375 XINC 0.001  
TYPE 3 145.403 0 674.374 XINC 0.001  
TYPE 3 145.625 0 680.373 XINC 0.001  
LOAD GENERATION 1  
TYPE 1 176.023 0 663.628 XINC 0.001  
TYPE 1 176.263 0 669.624 XINC 0.001  
TYPE 1 176.423 0 673.62 XINC 0.001  
TYPE 1 176.664 0 679.616 XINC 0.001  
TYPE 2 162.03 0 664.089 XINC 0.001  
TYPE 2 162.271 0 670.085 XINC 0.001  
TYPE 2 162.431 0 674.082 XINC 0.001  
TYPE 2 162.672 0 680.078 XINC 0.001  
TYPE 3 148.033 0 664.348 XINC 0.001  
TYPE 3 148.273 0 670.345 XINC 0.001  
TYPE 3 148.434 0 674.344 XINC 0.001  
TYPE 3 148.674 0 680.341 XINC 0.001  
LOAD GENERATION 1  
TYPE 1 179.02 0 663.504 XINC 0.001  
TYPE 1 179.279 0 669.498 XINC 0.001  
TYPE 1 179.452 0 673.494 XINC 0.001  
TYPE 1 179.71 0 679.489 XINC 0.001  
TYPE 2 165.029 0 664.007 XINC 0.001  
TYPE 2 165.288 0 670.002 XINC 0.001  
TYPE 2 165.461 0 673.999 XINC 0.001  
TYPE 2 165.72 0 679.994 XINC 0.001

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TYPE 3 151.033 0 664.309 XINC 0.001
TYPE 3 151.292 0 670.306 XINC 0.001
TYPE 3 151.464 0 674.304 XINC 0.001
TYPE 3 151.723 0 680.301 XINC 0.001
LOAD GENERATION 1
TYPE 1 182.017 0 663.369 XINC 0.001
TYPE 1 182.294 0 669.363 XINC 0.001
TYPE 1 182.479 0 673.359 XINC 0.001
TYPE 1 182.757 0 679.352 XINC 0.001
TYPE 2 168.028 0 663.916 XINC 0.001
TYPE 2 168.305 0 669.91 XINC 0.001
TYPE 2 168.49 0 673.906 XINC 0.001
TYPE 2 168.768 0 679.901 XINC 0.001
TYPE 3 154.032 0 664.261 XINC 0.001
TYPE 3 154.31 0 670.257 XINC 0.001
TYPE 3 154.495 0 674.255 XINC 0.001
TYPE 3 154.772 0 680.251 XINC 0.001
LOAD GENERATION 1
TYPE 1 185.014 0 663.226 XINC 0.001
TYPE 1 185.309 0 669.219 XINC 0.001
TYPE 1 185.507 0 673.214 XINC 0.001
TYPE 1 185.803 0 679.207 XINC 0.001
TYPE 2 171.026 0 663.816 XINC 0.001
TYPE 2 171.322 0 669.809 XINC 0.001
TYPE 2 171.519 0 673.805 XINC 0.001
TYPE 2 171.815 0 679.798 XINC 0.001
TYPE 3 157.032 0 664.204 XINC 0.001
TYPE 3 157.328 0 670.2 XINC 0.001
TYPE 3 157.525 0 674.196 XINC 0.001
TYPE 3 157.821 0 680.191 XINC 0.001
LOAD GENERATION 1
TYPE 1 188.01 0 663.074 XINC 0.001
TYPE 1 188.324 0 669.065 XINC 0.001
TYPE 1 188.534 0 673.06 XINC 0.001
TYPE 1 188.848 0 679.052 XINC 0.001
TYPE 2 174.024 0 663.706 XINC 0.001
TYPE 2 174.339 0 669.699 XINC 0.001
TYPE 2 174.548 0 673.694 XINC 0.001
TYPE 2 174.863 0 679.686 XINC 0.001
TYPE 3 160.031 0 664.138 XINC 0.001
TYPE 3 160.345 0 670.132 XINC 0.001
TYPE 3 160.555 0 674.128 XINC 0.001
TYPE 3 160.869 0 680.123 XINC 0.001
LOAD GENERATION 1
TYPE 1 191.005 0 662.912 XINC 0.001
TYPE 1 191.338 0 668.902 XINC 0.001
TYPE 1 191.56 0 672.896 XINC 0.001
TYPE 1 191.893 0 678.887 XINC 0.001
TYPE 2 177.022 0 663.588 XINC 0.001
TYPE 2 177.355 0 669.579 XINC 0.001
TYPE 2 177.577 0 673.573 XINC 0.001
TYPE 2 177.909 0 679.565 XINC 0.001
TYPE 3 163.03 0 664.063 XINC 0.001
TYPE 3 163.363 0 670.056 XINC 0.001
TYPE 3 163.585 0 674.051 XINC 0.001
TYPE 3 163.918 0 680.045 XINC 0.001
LOAD GENERATION 1
TYPE 1 194 0 662.741 XINC 0.001
TYPE 1 194.352 0 668.73 XINC 0.001
TYPE 1 194.586 0 672.724 XINC 0.001
TYPE 1 194.937 0 678.713 XINC 0.001
TYPE 2 180.019 0 663.46 XINC 0.001
TYPE 2 180.37 0 669.45 XINC 0.001
TYPE 2 180.605 0 673.444 XINC 0.001
TYPE 2 180.956 0 679.434 XINC 0.001
TYPE 3 166.029 0 663.978 XINC 0.001
TYPE 3 166.38 0 669.97 XINC 0.001
TYPE 3 166.614 0 673.965 XINC 0.001
TYPE 3 166.966 0 679.957 XINC 0.001
LOAD GENERATION 1
TYPE 1 196.995 0 662.56 XINC 0.001
TYPE 1 197.365 0 668.549 XINC 0.001
TYPE 1 197.611 0 672.541 XINC 0.001
TYPE 1 197.981 0 678.53 XINC 0.001
TYPE 2 183.016 0 663.323 XINC 0.001
TYPE 2 183.386 0 669.312 XINC 0.001
TYPE 2 183.632 0 673.305 XINC 0.001
TYPE 2 184.002 0 679.294 XINC 0.001
TYPE 3 169.027 0 663.884 XINC 0.001
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TYPE 3 169.397 0 669.875 XINC 0.001
TYPE 3 169.644 0 673.869 XINC 0.001
TYPE 3 170.014 0 679.86 XINC 0.001
LOAD GENERATION 1
TYPE 1 199.989 0 662.371 XINC 0.001
TYPE 1 200.377 0 668.358 XINC 0.001
TYPE 1 200.636 0 672.35 XINC 0.001
TYPE 1 201.024 0 678.337 XINC 0.001
TYPE 2 186.012 0 663.176 XINC 0.001
TYPE 2 186.401 0 669.164 XINC 0.001
TYPE 2 186.659 0 673.156 XINC 0.001
TYPE 2 187.048 0 679.144 XINC 0.001
TYPE 3 172.025 0 663.78 XINC 0.001
TYPE 3 172.414 0 669.77 XINC 0.001
TYPE 3 172.673 0 673.764 XINC 0.001
TYPE 3 173.061 0 679.753 XINC 0.001
LOAD GENERATION 1
TYPE 1 202.982 0 662.172 XINC 0.001
TYPE 1 203.389 0 668.158 XINC 0.001
TYPE 1 203.66 0 672.149 XINC 0.001
TYPE 1 204.067 0 678.135 XINC 0.001
TYPE 2 189.008 0 663.021 XINC 0.001
TYPE 2 189.415 0 669.007 XINC 0.001
TYPE 2 189.686 0 672.999 XINC 0.001
TYPE 2 190.093 0 678.985 XINC 0.001
TYPE 3 175.023 0 663.668 XINC 0.001
TYPE 3 175.43 0 669.657 XINC 0.001
TYPE 3 175.701 0 673.649 XINC 0.001
TYPE 3 176.108 0 679.638 XINC 0.001
LOAD GENERATION 1
TYPE 1 205.975 0 661.964 XINC 0.001
TYPE 1 206.4 0 667.949 XINC 0.001
TYPE 1 206.684 0 671.939 XINC 0.001
TYPE 1 207.109 0 677.924 XINC 0.001
TYPE 2 192.004 0 662.856 XINC 0.001
TYPE 2 192.429 0 668.841 XINC 0.001
TYPE 2 192.712 0 672.832 XINC 0.001
TYPE 2 193.138 0 678.817 XINC 0.001
TYPE 3 178.021 0 663.546 XINC 0.001
TYPE 3 178.446 0 669.534 XINC 0.001
TYPE 3 178.73 0 673.525 XINC 0.001
TYPE 3 179.155 0 679.512 XINC 0.001
LOAD GENERATION 1
TYPE 1 208.967 0 661.747 XINC 0.001
TYPE 1 209.411 0 667.73 XINC 0.001
TYPE 1 209.707 0 671.72 XINC 0.001
TYPE 1 210.15 0 677.703 XINC 0.001
TYPE 2 194.999 0 662.682 XINC 0.001
TYPE 2 195.442 0 668.666 XINC 0.001
TYPE 2 195.738 0 672.655 XINC 0.001
TYPE 2 196.182 0 678.639 XINC 0.001
TYPE 3 181.018 0 663.415 XINC 0.001
TYPE 3 181.462 0 669.401 XINC 0.001
TYPE 3 181.758 0 673.392 XINC 0.001
TYPE 3 182.201 0 679.378 XINC 0.001
LOAD GENERATION 1
TYPE 1 211.959 0 661.52 XINC 0.001
TYPE 1 212.421 0 667.503 XINC 0.001
TYPE 1 212.729 0 671.491 XINC 0.001
TYPE 1 213.191 0 677.473 XINC 0.001
TYPE 2 197.993 0 662.498 XINC 0.001
TYPE 2 198.455 0 668.481 XINC 0.001
TYPE 2 198.763 0 672.47 XINC 0.001
TYPE 2 199.225 0 678.452 XINC 0.001
TYPE 3 184.015 0 663.275 XINC 0.001
TYPE 3 184.477 0 669.26 XINC 0.001
TYPE 3 184.785 0 673.249 XINC 0.001
TYPE 3 185.247 0 679.234 XINC 0.001
LOAD GENERATION 1
TYPE 1 214.949 0 661.285 XINC 0.001
TYPE 1 215.43 0 667.266 XINC 0.001
TYPE 1 215.75 0 671.253 XINC 0.001
TYPE 1 216.231 0 677.233 XINC 0.001
TYPE 2 200.987 0 662.306 XINC 0.001
TYPE 2 201.467 0 668.287 XINC 0.001
TYPE 2 201.788 0 672.275 XINC 0.001
TYPE 2 202.268 0 678.256 XINC 0.001
TYPE 3 187.011 0 663.125 XINC 0.001
TYPE 3 187.492 0 669.109 XINC 0.001

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TYPE 3 187.812 0 673.097 XINC 0.001
TYPE 3 188.293 0 679.08 XINC 0.001
LOAD GENERATION 1
TYPE 1 217.939 0 661.04 XINC 0.001
TYPE 1 218.438 0 667.019 XINC 0.001
TYPE 1 218.771 0 671.005 XINC 0.001
TYPE 1 219.27 0 676.984 XINC 0.001
TYPE 2 203.98 0 662.104 XINC 0.001
TYPE 2 204.479 0 668.084 XINC 0.001
TYPE 2 204.812 0 672.07 XINC 0.001
TYPE 2 205.311 0 678.05 XINC 0.001
TYPE 3 190.007 0 662.967 XINC 0.001
TYPE 3 190.506 0 668.948 XINC 0.001
TYPE 3 190.839 0 672.936 XINC 0.001
TYPE 3 191.338 0 678.918 XINC 0.001
LOAD GENERATION 1
TYPE 1 220.929 0 660.786 XINC 0.001
TYPE 1 221.446 0 666.764 XINC 0.001
TYPE 1 221.791 0 670.749 XINC 0.001
TYPE 1 222.308 0 676.726 XINC 0.001
TYPE 2 206.973 0 661.893 XINC 0.001
TYPE 2 207.49 0 667.871 XINC 0.001
TYPE 2 207.835 0 671.857 XINC 0.001
TYPE 2 208.353 0 677.835 XINC 0.001
TYPE 3 193.002 0 662.799 XINC 0.001
TYPE 3 193.52 0 668.779 XINC 0.001
TYPE 3 193.865 0 672.766 XINC 0.001
TYPE 3 194.382 0 678.746 XINC 0.001
LOAD GENERATION 1
TYPE 1 223.917 0 660.523 XINC 0.001
TYPE 1 224.453 0 666.499 XINC 0.001
TYPE 1 224.81 0 670.483 XINC 0.001
TYPE 1 225.346 0 676.459 XINC 0.001
TYPE 2 209.965 0 661.672 XINC 0.001
TYPE 2 210.5 0 667.649 XINC 0.001
TYPE 2 210.858 0 671.633 XINC 0.001
TYPE 2 211.394 0 677.61 XINC 0.001
TYPE 3 195.997 0 662.622 XINC 0.001
TYPE 3 196.533 0 668.6 XINC 0.001
TYPE 3 196.89 0 672.586 XINC 0.001
TYPE 3 197.426 0 678.564 XINC 0.001
LOAD GENERATION 1
TYPE 1 226.905 0 660.25 XINC 0.001
TYPE 1 227.459 0 666.224 XINC 0.001
TYPE 1 227.828 0 670.207 XINC 0.001
TYPE 1 228.383 0 676.182 XINC 0.001
TYPE 2 212.956 0 661.443 XINC 0.001
TYPE 2 213.51 0 667.418 XINC 0.001
TYPE 2 213.88 0 671.401 XINC 0.001
TYPE 2 214.434 0 677.376 XINC 0.001
TYPE 3 198.991 0 662.435 XINC 0.001
TYPE 3 199.545 0 668.412 XINC 0.001
TYPE 3 199.915 0 672.396 XINC 0.001
TYPE 3 200.47 0 678.373 XINC 0.001
LOAD GENERATION 1
TYPE 1 229.891 0 659.968 XINC 0.001
TYPE 1 230.464 0 665.941 XINC 0.001
TYPE 1 230.846 0 669.923 XINC 0.001
TYPE 1 231.419 0 675.895 XINC 0.001
TYPE 2 215.946 0 661.204 XINC 0.001
TYPE 2 216.519 0 667.177 XINC 0.001
TYPE 2 216.901 0 671.16 XINC 0.001
TYPE 2 217.474 0 677.133 XINC 0.001
TYPE 3 201.985 0 662.239 XINC 0.001
TYPE 3 202.558 0 668.214 XINC 0.001
TYPE 3 202.939 0 672.198 XINC 0.001
TYPE 3 203.512 0 678.173 XINC 0.001
LOAD GENERATION 1
TYPE 1 232.877 0 659.677 XINC 0.001
TYPE 1 233.468 0 665.648 XINC 0.001
TYPE 1 233.862 0 669.629 XINC 0.001
TYPE 1 234.454 0 675.599 XINC 0.001
TYPE 2 218.936 0 660.956 XINC 0.001
TYPE 2 219.527 0 666.928 XINC 0.001
TYPE 2 219.921 0 670.909 XINC 0.001
TYPE 2 220.512 0 676.88 XINC 0.001
TYPE 3 204.978 0 662.035 XINC 0.001
TYPE 3 205.569 0 668.008 XINC 0.001
TYPE 3 205.963 0 671.99 XINC 0.001
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TYPE 3 206.554 0 677.963 XINC 0.001
LOAD GENERATION 1
TYPE 1 235.862 0 659.377 XINC 0.001
TYPE 1 236.472 0 665.346 XINC 0.001
TYPE 1 236.878 0 669.325 XINC 0.001
TYPE 1 237.488 0 675.294 XINC 0.001
TYPE 2 221.925 0 660.699 XINC 0.001
TYPE 2 222.534 0 666.669 XINC 0.001
TYPE 2 222.941 0 670.648 XINC 0.001
TYPE 2 223.55 0 676.618 XINC 0.001
TYPE 3 207.97 0 661.82 XINC 0.001
TYPE 3 208.58 0 667.792 XINC 0.001
TYPE 3 208.986 0 671.773 XINC 0.001
TYPE 3 209.596 0 677.744 XINC 0.001
LOAD GENERATION 1
TYPE 1 238.846 0 659.068 XINC 0.001
TYPE 1 239.474 0 665.035 XINC 0.001
TYPE 1 239.893 0 669.013 XINC 0.001
TYPE 1 240.521 0 674.98 XINC 0.001
TYPE 2 224.913 0 660.433 XINC 0.001
TYPE 2 225.541 0 666.4 XINC 0.001
TYPE 2 225.96 0 670.379 XINC 0.001
TYPE 2 226.588 0 676.346 XINC 0.001
TYPE 3 210.962 0 661.597 XINC 0.001
TYPE 3 211.59 0 667.566 XINC 0.001
TYPE 3 212.009 0 671.546 XINC 0.001
TYPE 3 212.637 0 677.516 XINC 0.001
LOAD GENERATION 1
TYPE 1 241.829 0 658.749 XINC 0.001
TYPE 1 242.476 0 664.714 XINC 0.001
TYPE 1 242.906 0 668.691 XINC 0.001
TYPE 1 243.553 0 674.656 XINC 0.001
TYPE 2 227.9 0 660.157 XINC 0.001
TYPE 2 228.547 0 666.123 XINC 0.001
TYPE 2 228.978 0 670.1 XINC 0.001
TYPE 2 229.624 0 676.066 XINC 0.001
TYPE 3 213.953 0 661.364 XINC 0.001
TYPE 3 214.599 0 667.332 XINC 0.001
TYPE 3 215.03 0 671.31 XINC 0.001
TYPE 3 215.677 0 677.278 XINC 0.001
LOAD GENERATION 1
TYPE 1 244.811 0 658.421 XINC 0.001
TYPE 1 245.476 0 664.385 XINC 0.001
TYPE 1 245.919 0 668.36 XINC 0.001
TYPE 1 246.584 0 674.323 XINC 0.001
TYPE 2 230.887 0 659.872 XINC 0.001
TYPE 2 231.552 0 665.836 XINC 0.001
TYPE 2 231.995 0 669.812 XINC 0.001
TYPE 2 232.66 0 675.775 XINC 0.001
TYPE 3 216.943 0 661.123 XINC 0.001
TYPE 3 217.608 0 667.088 XINC 0.001
TYPE 3 218.051 0 671.065 XINC 0.001
TYPE 3 218.716 0 677.031 XINC 0.001
LOAD GENERATION 1
TYPE 1 247.792 0 658.084 XINC 0.001
TYPE 1 248.475 0 664.045 XINC 0.001
TYPE 1 248.931 0 668.019 XINC 0.001
TYPE 1 249.614 0 673.98 XINC 0.001
TYPE 2 233.872 0 659.578 XINC 0.001
TYPE 2 234.556 0 665.54 XINC 0.001
TYPE 2 235.011 0 669.514 XINC 0.001
TYPE 2 235.694 0 675.476 XINC 0.001
TYPE 3 219.932 0 660.872 XINC 0.001
TYPE 3 220.616 0 666.835 XINC 0.001
TYPE 3 221.071 0 670.811 XINC 0.001
TYPE 3 221.755 0 676.774 XINC 0.001
LOAD GENERATION 1
TYPE 1 250.772 0 657.738 XINC 0.001
TYPE 1 251.474 0 663.697 XINC 0.001
TYPE 1 251.941 0 667.67 XINC 0.001
TYPE 1 252.643 0 673.629 XINC 0.001
TYPE 2 236.857 0 659.275 XINC 0.001
TYPE 2 237.559 0 665.234 XINC 0.001
TYPE 2 238.026 0 669.207 XINC 0.001
TYPE 2 238.728 0 675.167 XINC 0.001
TYPE 3 222.921 0 660.611 XINC 0.001
TYPE 3 223.623 0 666.573 XINC 0.001
TYPE 3 224.091 0 670.547 XINC 0.001
TYPE 3 224.792 0 676.508 XINC 0.001
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LOAD GENERATION 1  
TYPE 1 253.751 0 657.383 XINC 0.001  
TYPE 1 254.471 0 663.34 XINC 0.001  
TYPE 1 254.951 0 667.311 XINC 0.001  
TYPE 1 255.671 0 673.267 XINC 0.001  
TYPE 2 239.841 0 658.963 XINC 0.001  
TYPE 2 240.561 0 664.92 XINC 0.001  
TYPE 2 241.041 0 668.891 XINC 0.001  
TYPE 2 241.76 0 674.849 XINC 0.001  
TYPE 3 225.909 0 660.342 XINC 0.001  
TYPE 3 226.629 0 666.301 XINC 0.001  
TYPE 3 227.109 0 670.274 XINC 0.001  
TYPE 3 227.829 0 676.233 XINC 0.001  
LOAD GENERATION 1  
TYPE 1 256.729 0 657.018 XINC 0.001  
TYPE 1 257.467 0 662.973 XINC 0.001  
TYPE 1 257.959 0 666.943 XINC 0.001  
TYPE 1 258.698 0 672.897 XINC 0.001  
TYPE 2 242.823 0 658.641 XINC 0.001  
TYPE 2 243.562 0 664.596 XINC 0.001  
TYPE 2 244.054 0 668.566 XINC 0.001  
TYPE 2 244.792 0 674.521 XINC 0.001  
TYPE 3 228.896 0 660.063 XINC 0.001  
TYPE 3 229.634 0 666.02 XINC 0.001  
TYPE 3 230.127 0 669.991 XINC 0.001  
TYPE 3 230.865 0 675.948 XINC 0.001  
LOAD GENERATION 1  
TYPE 1 259.706 0 656.645 XINC 0.001  
TYPE 1 260.462 0 662.597 XINC 0.001  
TYPE 1 260.967 0 666.565 XINC 0.001  
TYPE 1 261.723 0 672.517 XINC 0.001  
TYPE 2 245.805 0 658.31 XINC 0.001  
TYPE 2 246.562 0 664.263 XINC 0.001  
TYPE 2 247.066 0 668.231 XINC 0.001  
TYPE 2 247.823 0 674.184 XINC 0.001  
TYPE 3 231.882 0 659.775 XINC 0.001  
TYPE 3 232.639 0 665.73 XINC 0.001  
TYPE 3 233.143 0 669.7 XINC 0.001  
TYPE 3 233.9 0 675.654 XINC 0.001  
LOAD GENERATION 1  
TYPE 1 262.681 0 656.262 XINC 0.001  
TYPE 1 263.456 0 662.212 XINC 0.001  
TYPE 1 263.973 0 666.178 XINC 0.001  
TYPE 1 264.747 0 672.128 XINC 0.001  
TYPE 2 248.786 0 657.97 XINC 0.001  
TYPE 2 249.561 0 663.92 XINC 0.001  
TYPE 2 250.077 0 667.887 XINC 0.001  
TYPE 2 250.852 0 673.838 XINC 0.001  
TYPE 3 234.867 0 659.478 XINC 0.001  
TYPE 3 235.643 0 665.43 XINC 0.001  
TYPE 3 236.159 0 669.399 XINC 0.001  
TYPE 3 236.935 0 675.351 XINC 0.001  
LOAD GENERATION 1  
TYPE 1 265.655 0 655.87 XINC 0.001  
TYPE 1 266.449 0 661.817 XINC 0.001  
TYPE 1 266.977 0 665.782 XINC 0.001  
TYPE 1 267.771 0 671.729 XINC 0.001  
TYPE 2 251.765 0 657.621 XINC 0.001  
TYPE 2 252.559 0 663.569 XINC 0.001  
TYPE 2 253.088 0 667.534 XINC 0.001  
TYPE 2 253.881 0 673.482 XINC 0.001  
TYPE 3 237.852 0 659.172 XINC 0.001  
TYPE 3 238.645 0 665.122 XINC 0.001  
TYPE 3 239.174 0 669.088 XINC 0.001  
TYPE 3 239.968 0 675.038 XINC 0.001  
LOAD GENERATION 1  
TYPE 1 268.628 0 655.469 XINC 0.001  
TYPE 1 269.44 0 661.413 XINC 0.001  
TYPE 1 269.981 0 665.377 XINC 0.001  
TYPE 1 270.793 0 671.322 XINC 0.001  
TYPE 2 254.744 0 657.263 XINC 0.001  
TYPE 2 255.556 0 663.208 XINC 0.001  
TYPE 2 256.097 0 667.172 XINC 0.001  
TYPE 2 256.908 0 673.117 XINC 0.001  
TYPE 3 240.835 0 658.856 XINC 0.001  
TYPE 3 241.647 0 664.804 XINC 0.001  
TYPE 3 242.188 0 668.769 XINC 0.001  
TYPE 3 243 0 674.716 XINC 0.001  
LOAD GENERATION 1

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TYPE 1 271.6 0 655.058 XINC 0.001
TYPE 1 272.43 0 661.001 XINC 0.001
TYPE 1 272.983 0 664.962 XINC 0.001
TYPE 1 273.813 0 670.904 XINC 0.001
TYPE 2 257.721 0 656.895 XINC 0.001
TYPE 2 258.551 0 662.838 XINC 0.001
TYPE 2 259.105 0 666.8 XINC 0.001
TYPE 2 259.935 0 672.743 XINC 0.001
TYPE 3 243.817 0 658.532 XINC 0.001
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TYPE 1 276.833 0 670.478 XINC 0.001
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TYPE 3 247.647 0 664.14 XINC 0.001
TYPE 3 248.213 0 668.101 XINC 0.001
TYPE 3 249.062 0 674.044 XINC 0.001
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TYPE 2 265.984 0 671.966 XINC 0.001
TYPE 3 249.779 0 657.855 XINC 0.001
TYPE 3 250.646 0 663.794 XINC 0.001
TYPE 3 251.224 0 667.754 XINC 0.001
TYPE 3 252.091 0 673.693 XINC 0.001
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TYPE 2 268.121 0 665.629 XINC 0.001
TYPE 2 269.006 0 671.564 XINC 0.001
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TYPE 3 254.234 0 667.397 XINC 0.001
TYPE 3 255.119 0 673.334 XINC 0.001
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TYPE 3 256.64 0 663.075 XINC 0.001
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TYPE 3 258.146 0 672.965 XINC 0.001
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TYPE 2 275.048 0 670.731 XINC 0.001
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TYPE 3 263.256 0 666.271 XINC 0.001
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TYPE 1 299.943 0 660.815 XINC 0.001
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TYPE 2 286.12 0 663.037 XINC 0.001
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TYPE 3 271.605 0 661.116 XINC 0.001
TYPE 3 272.268 0 665.062 XINC 0.001
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TYPE 1 302.256 0 656.365 XINC 0.001
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TYPE 3 274.594 0 660.696 XINC 0.001
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TYPE 3 276.282 0 670.557 XINC 0.001
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TYPE 1 308.203 0 655.328 XINC 0.001
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TYPE 3 281.268 0 663.769 XINC 0.001
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TYPE 1 317.847 0 657.635 XINC 0.001
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TYPE 3 289.52 0 658.46 XINC 0.001
TYPE 3 290.256 0 662.393 XINC 0.001
TYPE 3 291.36 0 668.293 XINC 0.001
LOAD GENERATION 1
TYPE 1 318.956 0 647.249 XINC 0.001
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TYPE 1 320.826 0 657.073 XINC 0.001
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TYPE 2 308.177 0 665.487 XINC 0.001
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TYPE 3 293.249 0 661.916 XINC 0.001
TYPE 3 294.371 0 667.813 XINC 0.001
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TYPE 1 323.802 0 656.501 XINC 0.001
TYPE 1 324.942 0 662.392 XINC 0.001
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TYPE 3 297.381 0 667.323 XINC 0.001
LOAD GENERATION 1
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TYPE 1 326.777 0 655.921 XINC 0.001
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TYPE 1 332.721 0 654.732 XINC 0.001  
TYPE 1 333.915 0 660.612 XINC 0.001  
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TYPE 3 303.214 0 650.112 XINC 0.001  
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TYPE 2 323.172 0 662.733 XINC 0.001  
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TYPE 3 307.382 0 655.473 XINC 0.001  
TYPE 3 308.191 0 659.392 XINC 0.001  
TYPE 3 309.404 0 665.271 XINC 0.001  
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TYPE 1 337.837 0 649.592 XINC 0.001  
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TYPE 1 345.853 0 658.11 XINC 0.001

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TYPE 3 459.102 0 615.908 XINC 0.001  
TYPE 3 460.527 0 619.648 XINC 0.001  
TYPE 3 462.663 0 625.257 XINC 0.001  
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TYPE 1 491.815 0 614.574 XINC 0.001  
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TYPE 3 461.951 0 614.911 XINC 0.001  
TYPE 3 463.387 0 618.646 XINC 0.001  
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LOAD GENERATION 1  
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TYPE 1 493.856 0 603.057 XINC 0.001  
TYPE 1 495.314 0 606.781 XINC 0.001  
TYPE 1 497.501 0 612.369 XINC 0.001  
TYPE 2 478.595 0 602.479 XINC 0.001  
TYPE 2 480.783 0 608.067 XINC 0.001  
TYPE 2 482.241 0 611.792 XINC 0.001  
TYPE 2 484.429 0 617.38 XINC 0.001  
TYPE 3 465.452 0 607.3 XINC 0.001  
TYPE 3 467.64 0 612.889 XINC 0.001  
TYPE 3 469.098 0 616.615 XINC 0.001  
TYPE 3 471.286 0 622.205 XINC 0.001  
LOAD GENERATION 1  
TYPE 1 494.46 0 596.372 XINC 0.001  
TYPE 1 496.665 0 601.952 XINC 0.001  
TYPE 1 498.134 0 605.672 XINC 0.001  
TYPE 1 500.339 0 611.253 XINC 0.001  
TYPE 2 481.403 0 601.421 XINC 0.001  
TYPE 2 483.607 0 607.002 XINC 0.001  
TYPE 2 485.077 0 610.723 XINC 0.001  
TYPE 2 487.282 0 616.304 XINC 0.001  
TYPE 3 468.274 0 606.283 XINC 0.001  
TYPE 3 470.479 0 611.865 XINC 0.001  
TYPE 3 471.95 0 615.587 XINC 0.001  
TYPE 3 474.155 0 621.17 XINC 0.001  
LOAD GENERATION 1  
TYPE 1 497.249 0 595.265 XINC 0.001  
TYPE 1 499.47 0 600.839 XINC 0.001  
TYPE 1 500.951 0 604.554 XINC 0.001  
TYPE 1 503.173 0 610.128 XINC 0.001  
TYPE 2 484.207 0 600.355 XINC 0.001  
TYPE 2 486.429 0 605.929 XINC 0.001  
TYPE 2 487.91 0 609.645 XINC 0.001  
TYPE 2 490.132 0 615.219 XINC 0.001  
TYPE 3 471.093 0 605.257 XINC 0.001  
TYPE 3 473.316 0 610.833 XINC 0.001  
TYPE 3 474.797 0 614.55 XINC 0.001  
TYPE 3 477.02 0 620.126 XINC 0.001  
LOAD GENERATION 1

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TYPE 1 500.034 0 594.15 XINC 0.001
TYPE 1 502.273 0 599.717 XINC 0.001
TYPE 1 503.765 0 603.428 XINC 0.001
TYPE 1 506.004 0 608.995 XINC 0.001
TYPE 2 487.008 0 599.28 XINC 0.001
TYPE 2 489.247 0 604.847 XINC 0.001
TYPE 2 490.739 0 608.559 XINC 0.001
TYPE 2 492.978 0 614.126 XINC 0.001
TYPE 3 473.909 0 604.222 XINC 0.001
TYPE 3 476.149 0 609.791 XINC 0.001
TYPE 3 477.642 0 613.504 XINC 0.001
TYPE 3 479.882 0 619.073 XINC 0.001
LOAD GENERATION 1
TYPE 1 502.815 0 593.026 XINC 0.001
TYPE 1 505.071 0 598.586 XINC 0.001
TYPE 1 506.575 0 602.293 XINC 0.001
TYPE 1 508.831 0 607.852 XINC 0.001
TYPE 2 489.805 0 598.197 XINC 0.001
TYPE 2 492.061 0 603.757 XINC 0.001
TYPE 2 493.566 0 607.464 XINC 0.001
TYPE 2 495.822 0 613.024 XINC 0.001
TYPE 3 476.722 0 603.179 XINC 0.001
TYPE 3 478.979 0 608.741 XINC 0.001
TYPE 3 480.483 0 612.449 XINC 0.001
TYPE 3 482.74 0 618.011 XINC 0.001
LOAD GENERATION 1
TYPE 1 505.594 0 591.894 XINC 0.001
TYPE 1 507.867 0 597.447 XINC 0.001
TYPE 1 509.382 0 601.149 XINC 0.001
TYPE 1 511.655 0 606.701 XINC 0.001
TYPE 2 492.599 0 597.104 XINC 0.001
TYPE 2 494.873 0 602.658 XINC 0.001
TYPE 2 496.388 0 606.36 XINC 0.001
TYPE 2 498.661 0 611.913 XINC 0.001
TYPE 3 479.532 0 602.127 XINC 0.001
TYPE 3 481.806 0 607.682 XINC 0.001
TYPE 3 483.321 0 611.386 XINC 0.001
TYPE 3 485.595 0 616.941 XINC 0.001
LOAD GENERATION 1
TYPE 1 508.368 0 590.753 XINC 0.001
TYPE 1 510.658 0 596.299 XINC 0.001
TYPE 1 512.185 0 599.996 XINC 0.001
TYPE 1 514.475 0 605.542 XINC 0.001
TYPE 2 495.39 0 596.004 XINC 0.001
TYPE 2 497.681 0 601.55 XINC 0.001
TYPE 2 499.207 0 605.248 XINC 0.001
TYPE 2 501.498 0 610.794 XINC 0.001
TYPE 3 482.338 0 601.067 XINC 0.001
TYPE 3 484.629 0 606.615 XINC 0.001
TYPE 3 486.156 0 610.314 XINC 0.001
TYPE 3 488.447 0 615.862 XINC 0.001
LOAD GENERATION 1
TYPE 1 511.139 0 589.604 XINC 0.001
TYPE 1 513.447 0 595.143 XINC 0.001
TYPE 1 514.985 0 598.835 XINC 0.001
TYPE 1 517.292 0 604.374 XINC 0.001
TYPE 2 498.178 0 594.894 XINC 0.001
TYPE 2 500.485 0 600.434 XINC 0.001
TYPE 2 502.023 0 604.126 XINC 0.001
TYPE 2 504.331 0 609.666 XINC 0.001
TYPE 3 485.141 0 599.998 XINC 0.001
TYPE 3 487.449 0 605.539 XINC 0.001
TYPE 3 488.988 0 609.233 XINC 0.001
TYPE 3 491.296 0 614.774 XINC 0.001
LOAD GENERATION 1
TYPE 1 513.907 0 588.446 XINC 0.001
TYPE 1 516.231 0 593.978 XINC 0.001
TYPE 1 517.781 0 597.665 XINC 0.001
TYPE 1 520.105 0 603.197 XINC 0.001
TYPE 2 500.961 0 593.776 XINC 0.001
TYPE 2 503.286 0 599.309 XINC 0.001
TYPE 2 504.836 0 602.997 XINC 0.001
TYPE 2 507.16 0 608.529 XINC 0.001
TYPE 3 487.941 0 598.92 XINC 0.001
TYPE 3 490.266 0 604.454 XINC 0.001
TYPE 3 491.816 0 608.143 XINC 0.001
TYPE 3 494.141 0 613.677 XINC 0.001
LOAD GENERATION 1
TYPE 1 516.671 0 587.28 XINC 0.001
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TYPE 1 519.012 0 592.804 XINC 0.001
TYPE 1 520.573 0 596.487 XINC 0.001
TYPE 1 522.914 0 602.011 XINC 0.001
TYPE 2 503.742 0 592.65 XINC 0.001
TYPE 2 506.083 0 598.175 XINC 0.001
TYPE 2 507.645 0 601.858 XINC 0.001
TYPE 2 509.986 0 607.383 XINC 0.001
TYPE 3 490.737 0 597.834 XINC 0.001
TYPE 3 493.079 0 603.36 XINC 0.001
TYPE 3 494.641 0 607.045 XINC 0.001
TYPE 3 496.983 0 612.571 XINC 0.001
LOAD GENERATION 1
TYPE 1 519.431 0 586.105 XINC 0.001
TYPE 1 521.79 0 591.622 XINC 0.001
TYPE 1 523.362 0 595.3 XINC 0.001
TYPE 1 525.72 0 600.817 XINC 0.001
TYPE 2 506.519 0 591.515 XINC 0.001
TYPE 2 508.877 0 597.032 XINC 0.001
TYPE 2 510.45 0 600.711 XINC 0.001
TYPE 2 512.809 0 606.228 XINC 0.001
TYPE 3 493.53 0 596.739 XINC 0.001
TYPE 3 495.889 0 602.258 XINC 0.001
TYPE 3 497.462 0 605.937 XINC 0.001
TYPE 3 499.822 0 611.457 XINC 0.001
LOAD GENERATION 1
TYPE 1 522.188 0 584.921 XINC 0.001
TYPE 1 524.563 0 590.431 XINC 0.001
TYPE 1 526.147 0 594.104 XINC 0.001
TYPE 1 528.522 0 599.614 XINC 0.001
TYPE 2 509.292 0 590.371 XINC 0.001
TYPE 2 511.668 0 595.881 XINC 0.001
TYPE 2 513.252 0 599.555 XINC 0.001
TYPE 2 515.627 0 605.065 XINC 0.001
TYPE 3 496.32 0 595.635 XINC 0.001
TYPE 3 498.696 0 601.147 XINC 0.001
TYPE 3 500.28 0 604.822 XINC 0.001
TYPE 3 502.657 0 610.334 XINC 0.001
LOAD GENERATION 1
TYPE 1 524.941 0 583.729 XINC 0.001
TYPE 1 527.333 0 589.232 XINC 0.001
TYPE 1 528.928 0 592.9 XINC 0.001
TYPE 1 531.321 0 598.402 XINC 0.001
TYPE 2 512.062 0 589.219 XINC 0.001
TYPE 2 514.455 0 594.722 XINC 0.001
TYPE 2 516.05 0 598.391 XINC 0.001
TYPE 2 518.443 0 603.894 XINC 0.001
TYPE 3 499.106 0 594.523 XINC 0.001
TYPE 3 501.499 0 600.027 XINC 0.001
TYPE 3 503.095 0 603.697 XINC 0.001
TYPE 3 505.488 0 609.202 XINC 0.001
LOAD GENERATION 1
TYPE 1 527.69 0 582.529 XINC 0.001
TYPE 1 530.1 0 588.024 XINC 0.001
TYPE 1 531.706 0 591.687 XINC 0.001
TYPE 1 534.115 0 597.182 XINC 0.001
TYPE 2 514.829 0 588.058 XINC 0.001
TYPE 2 517.238 0 593.554 XINC 0.001
TYPE 2 518.845 0 597.217 XINC 0.001
TYPE 2 521.254 0 602.713 XINC 0.001
TYPE 3 501.889 0 593.402 XINC 0.001
TYPE 3 504.299 0 598.899 XINC 0.001
TYPE 3 505.906 0 602.564 XINC 0.001
TYPE 3 508.316 0 608.061 XINC 0.001
LOAD GENERATION 1
TYPE 1 530.436 0 581.32 XINC 0.001
TYPE 1 532.862 0 586.807 XINC 0.001
TYPE 1 534.48 0 590.466 XINC 0.001
TYPE 1 536.906 0 595.953 XINC 0.001
TYPE 2 517.591 0 586.889 XINC 0.001
TYPE 2 520.018 0 592.377 XINC 0.001
TYPE 2 521.635 0 596.036 XINC 0.001
TYPE 2 524.062 0 601.524 XINC 0.001
TYPE 3 504.668 0 592.272 XINC 0.001
TYPE 3 507.095 0 597.762 XINC 0.001
TYPE 3 508.713 0 601.422 XINC 0.001
TYPE 3 511.141 0 606.912 XINC 0.001
LOAD GENERATION 1
TYPE 1 533.178 0 580.103 XINC 0.001
TYPE 1 535.621 0 585.583 XINC 0.001

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TYPE 1 537.25 0 589.236 XINC 0.001  
TYPE 1 539.693 0 594.716 XINC 0.001  
TYPE 2 520.35 0 585.711 XINC 0.001  
TYPE 2 522.794 0 591.192 XINC 0.001  
TYPE 2 524.423 0 594.846 XINC 0.001  
TYPE 2 526.866 0 600.326 XINC 0.001  
TYPE 3 507.444 0 591.135 XINC 0.001  
TYPE 3 509.888 0 596.617 XINC 0.001  
TYPE 3 511.517 0 600.272 XINC 0.001  
TYPE 3 513.961 0 605.754 XINC 0.001  
LOAD GENERATION 1  
TYPE 1 535.916 0 578.877 XINC 0.001  
TYPE 1 538.376 0 584.349 XINC 0.001  
TYPE 1 540.016 0 587.998 XINC 0.001  
TYPE 1 542.476 0 593.47 XINC 0.001  
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TYPE 2 525.566 0 589.998 XINC 0.001  
TYPE 2 527.206 0 593.647 XINC 0.001  
TYPE 2 529.667 0 599.12 XINC 0.001  
TYPE 3 510.216 0 589.988 XINC 0.001  
TYPE 3 512.677 0 595.463 XINC 0.001  
TYPE 3 514.318 0 599.113 XINC 0.001  
TYPE 3 516.779 0 604.587 XINC 0.001  
LOAD GENERATION 1  
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TYPE 1 541.127 0 583.107 XINC 0.001  
TYPE 1 542.778 0 586.751 XINC 0.001  
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TYPE 2 525.858 0 583.33 XINC 0.001  
TYPE 2 528.335 0 588.796 XINC 0.001  
TYPE 2 529.986 0 592.439 XINC 0.001  
TYPE 2 532.464 0 597.905 XINC 0.001  
TYPE 3 512.985 0 588.833 XINC 0.001  
TYPE 3 515.463 0 594.3 XINC 0.001  
TYPE 3 517.115 0 597.945 XINC 0.001  
TYPE 3 519.592 0 603.412 XINC 0.001  
LOAD GENERATION 1  
TYPE 1 541.381 0 576.4 XINC 0.001  
TYPE 1 543.875 0 581.857 XINC 0.001  
TYPE 1 545.537 0 585.495 XINC 0.001  
TYPE 1 548.031 0 590.952 XINC 0.001  
TYPE 2 528.606 0 582.127 XINC 0.001  
TYPE 2 531.1 0 587.585 XINC 0.001  
TYPE 2 532.763 0 591.223 XINC 0.001  
TYPE 2 535.257 0 596.681 XINC 0.001  
TYPE 3 515.75 0 587.669 XINC 0.001  
TYPE 3 518.245 0 593.129 XINC 0.001  
TYPE 3 519.908 0 596.768 XINC 0.001  
TYPE 3 522.403 0 602.228 XINC 0.001  
LOAD GENERATION 1  
TYPE 1 544.108 0 575.149 XINC 0.001  
TYPE 1 546.618 0 580.598 XINC 0.001  
TYPE 1 548.292 0 584.231 XINC 0.001  
TYPE 1 550.802 0 589.681 XINC 0.001  
TYPE 2 531.35 0 580.915 XINC 0.001  
TYPE 2 533.861 0 586.365 XINC 0.001  
TYPE 2 535.535 0 589.999 XINC 0.001  
TYPE 2 538.046 0 595.449 XINC 0.001  
TYPE 3 518.511 0 586.497 XINC 0.001  
TYPE 3 521.023 0 591.949 XINC 0.001  
TYPE 3 522.697 0 595.583 XINC 0.001  
TYPE 3 525.209 0 601.035 XINC 0.001  
LOAD GENERATION 1  
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TYPE 1 549.358 0 579.331 XINC 0.001  
TYPE 1 551.043 0 582.959 XINC 0.001  
TYPE 1 553.57 0 588.401 XINC 0.001  
TYPE 2 534.091 0 579.695 XINC 0.001  
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TYPE 2 540.831 0 594.208 XINC 0.001  
TYPE 3 521.269 0 585.317 XINC 0.001  
TYPE 3 523.798 0 590.761 XINC 0.001  
TYPE 3 525.483 0 594.39 XINC 0.001  
TYPE 3 528.012 0 599.834 XINC 0.001  
LOAD GENERATION 1  
TYPE 1 549.549 0 572.621 XINC 0.001  
TYPE 1 552.093 0 578.055 XINC 0.001  
TYPE 1 553.789 0 581.678 XINC 0.001

TYPE 1 556.334 0 587.112 XINC 0.001  
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TYPE 2 541.068 0 587.524 XINC 0.001  
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TYPE 3 526.569 0 589.564 XINC 0.001  
TYPE 3 528.266 0 593.188 XINC 0.001  
TYPE 3 530.811 0 598.624 XINC 0.001  
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TYPE 1 554.825 0 576.771 XINC 0.001  
TYPE 1 556.532 0 580.389 XINC 0.001  
TYPE 1 559.093 0 585.815 XINC 0.001  
TYPE 2 539.561 0 577.229 XINC 0.001  
TYPE 2 542.122 0 582.656 XINC 0.001  
TYPE 2 543.829 0 586.274 XINC 0.001  
TYPE 2 546.391 0 591.7 XINC 0.001  
TYPE 3 526.774 0 582.93 XINC 0.001  
TYPE 3 529.336 0 588.358 XINC 0.001  
TYPE 3 531.044 0 591.977 XINC 0.001  
TYPE 3 533.606 0 597.405 XINC 0.001  
LOAD GENERATION 1  
TYPE 1 554.975 0 570.06 XINC 0.001  
TYPE 1 557.553 0 575.479 XINC 0.001  
TYPE 1 559.271 0 579.091 XINC 0.001  
TYPE 1 561.849 0 584.509 XINC 0.001  
TYPE 2 542.29 0 575.984 XINC 0.001  
TYPE 2 544.868 0 581.402 XINC 0.001  
TYPE 2 546.587 0 585.015 XINC 0.001  
TYPE 2 549.164 0 590.434 XINC 0.001  
TYPE 3 529.521 0 581.724 XINC 0.001  
TYPE 3 532.1 0 587.144 XINC 0.001  
TYPE 3 533.819 0 590.758 XINC 0.001  
TYPE 3 536.397 0 596.178 XINC 0.001  
LOAD GENERATION 1  
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TYPE 1 560.277 0 574.178 XINC 0.001  
TYPE 1 562.006 0 577.784 XINC 0.001  
TYPE 1 564.6 0 583.195 XINC 0.001  
TYPE 2 545.016 0 574.73 XINC 0.001  
TYPE 2 547.61 0 580.141 XINC 0.001  
TYPE 2 549.34 0 583.748 XINC 0.001  
TYPE 2 551.934 0 589.158 XINC 0.001  
TYPE 3 532.264 0 580.509 XINC 0.001  
TYPE 3 534.86 0 585.922 XINC 0.001  
TYPE 3 536.59 0 589.53 XINC 0.001  
TYPE 3 539.185 0 594.942 XINC 0.001  
LOAD GENERATION 1  
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TYPE 2 554.7 0 587.875 XINC 0.001  
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TYPE 3 537.616 0 584.691 XINC 0.001  
TYPE 3 539.357 0 588.294 XINC 0.001  
TYPE 3 541.969 0 593.698 XINC 0.001  
LOAD GENERATION 1  
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TYPE 1 565.712 0 571.551 XINC 0.001  
TYPE 1 567.464 0 575.147 XINC 0.001  
TYPE 1 570.091 0 580.541 XINC 0.001  
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TYPE 1 570.186 0 573.815 XINC 0.001  
TYPE 1 572.831 0 579.201 XINC 0.001

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TYPE 2 557.576 0 579.895 XINC 0.001
TYPE 2 560.22 0 585.282 XINC 0.001
TYPE 3 540.471 0 576.815 XINC 0.001
TYPE 3 543.116 0 582.203 XINC 0.001
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TYPE 3 547.525 0 591.183 XINC 0.001
LOAD GENERATION 1
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TYPE 1 572.905 0 572.475 XINC 0.001
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TYPE 2 555.878 0 569.63 XINC 0.001
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TYPE 2 560.313 0 578.594 XINC 0.001
TYPE 2 562.974 0 583.973 XINC 0.001
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LOAD GENERATION 1
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TYPE 3 553.135 0 581.984 XINC 0.001
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LOAD GENERATION 1
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TYPE 2 566.694 0 571.072 XINC 0.001
TYPE 2 568.501 0 574.641 XINC 0.001
TYPE 2 571.212 0 579.994 XINC 0.001
TYPE 3 551.36 0 571.771 XINC 0.001
TYPE 3 554.071 0 577.127 XINC 0.001
TYPE 3 555.879 0 580.697 XINC 0.001
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LOAD GENERATION 1
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TYPE 3 556.8 0 575.836 XINC 0.001
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LOAD GENERATION 1
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TYPE 1 589.179 0 570.986 XINC 0.001
TYPE 2 569.366 0 563.068 XINC 0.001

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TYPE 3 556.78 0 569.199 XINC 0.001
TYPE 3 559.525 0 574.538 XINC 0.001
TYPE 3 561.355 0 578.097 XINC 0.001
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LOAD GENERATION 1
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TYPE 1 587.289 0 560.709 XINC 0.001
TYPE 1 589.128 0 564.26 XINC 0.001
TYPE 1 591.888 0 569.588 XINC 0.001
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TYPE 2 574.812 0 567.059 XINC 0.001
TYPE 2 576.652 0 570.611 XINC 0.001
TYPE 2 579.412 0 575.939 XINC 0.001
TYPE 3 559.485 0 567.901 XINC 0.001
TYPE 3 562.246 0 573.231 XINC 0.001
TYPE 3 564.086 0 576.784 XINC 0.001
TYPE 3 566.847 0 582.114 XINC 0.001
LOAD GENERATION 1
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TYPE 1 591.818 0 562.862 XINC 0.001
TYPE 1 594.594 0 568.181 XINC 0.001
TYPE 2 574.733 0 560.385 XINC 0.001
TYPE 2 577.51 0 565.705 XINC 0.001
TYPE 2 579.361 0 569.251 XINC 0.001
TYPE 2 582.137 0 574.571 XINC 0.001
TYPE 3 562.185 0 566.594 XINC 0.001
TYPE 3 564.963 0 571.915 XINC 0.001
TYPE 3 566.814 0 575.463 XINC 0.001
TYPE 3 569.591 0 580.784 XINC 0.001
LOAD GENERATION 1
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TYPE 3 564.881 0 565.279 XINC 0.001
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LOAD GENERATION 1
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TYPE 1 595.31 0 556.506 XINC 0.001
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TYPE 3 570.384 0 569.259 XINC 0.001
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TYPE 3 575.068 0 578.099 XINC 0.001
LOAD GENERATION 1
TYPE 1 595.15 0 549.796 XINC 0.001
TYPE 1 597.975 0 555.089 XINC 0.001
TYPE 1 599.858 0 558.618 XINC 0.001
TYPE 1 602.684 0 563.911 XINC 0.001
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TYPE 2 585.578 0 561.593 XINC 0.001
TYPE 2 587.461 0 565.122 XINC 0.001
TYPE 2 590.287 0 570.416 XINC 0.001
TYPE 3 570.262 0 562.624 XINC 0.001
TYPE 3 573.088 0 567.919 XINC 0.001
TYPE 3 574.973 0 571.449 XINC 0.001
TYPE 3 577.799 0 576.744 XINC 0.001
LOAD GENERATION 1
TYPE 1 597.794 0 548.379 XINC 0.001
TYPE 1 600.636 0 553.663 XINC 0.001
TYPE 1 602.53 0 557.186 XINC 0.001
TYPE 1 605.372 0 562.471 XINC 0.001
TYPE 2 585.416 0 554.921 XINC 0.001
TYPE 2 588.258 0 560.205 XINC 0.001
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TYPE 2 590.153 0 563.729 XINC 0.001
TYPE 2 592.995 0 569.014 XINC 0.001
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TYPE 3 575.789 0 566.57 XINC 0.001
TYPE 3 577.684 0 570.094 XINC 0.001
TYPE 3 580.527 0 575.381 XINC 0.001
LOAD GENERATION 1
TYPE 1 600.434 0 546.954 XINC 0.001
TYPE 1 603.292 0 552.23 XINC 0.001
TYPE 1 605.197 0 555.747 XINC 0.001
TYPE 1 608.055 0 561.022 XINC 0.001
TYPE 2 588.077 0 553.534 XINC 0.001
TYPE 2 590.935 0 558.81 XINC 0.001
TYPE 2 592.84 0 562.327 XINC 0.001
TYPE 2 595.699 0 567.604 XINC 0.001
TYPE 3 575.626 0 559.935 XINC 0.001
TYPE 3 578.485 0 565.213 XINC 0.001
TYPE 3 580.391 0 568.731 XINC 0.001
TYPE 3 583.25 0 574.009 XINC 0.001
LOAD GENERATION 1
TYPE 1 603.069 0 545.521 XINC 0.001
TYPE 1 605.944 0 550.788 XINC 0.001
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TYPE 1 610.734 0 559.566 XINC 0.001
TYPE 2 590.733 0 552.139 XINC 0.001
TYPE 2 593.607 0 557.406 XINC 0.001
TYPE 2 595.523 0 560.918 XINC 0.001
TYPE 2 598.398 0 566.185 XINC 0.001
TYPE 3 578.302 0 558.578 XINC 0.001
TYPE 3 581.177 0 563.847 XINC 0.001
TYPE 3 583.094 0 567.36 XINC 0.001
TYPE 3 585.969 0 572.629 XINC 0.001
LOAD GENERATION 1
TYPE 1 605.701 0 544.08 XINC 0.001
TYPE 1 608.591 0 549.338 XINC 0.001
TYPE 1 610.518 0 552.843 XINC 0.001
TYPE 1 613.409 0 558.101 XINC 0.001
TYPE 2 593.384 0 550.736 XINC 0.001
TYPE 2 596.275 0 555.994 XINC 0.001
TYPE 2 598.202 0 559.5 XINC 0.001
TYPE 2 601.093 0 564.758 XINC 0.001
TYPE 3 580.973 0 557.214 XINC 0.001
TYPE 3 583.865 0 562.474 XINC 0.001
TYPE 3 585.792 0 565.98 XINC 0.001
TYPE 3 588.684 0 571.24 XINC 0.001
LOAD GENERATION 1
TYPE 1 608.327 0 542.63 XINC 0.001
TYPE 1 611.234 0 547.879 XINC 0.001
TYPE 1 613.172 0 551.379 XINC 0.001
TYPE 1 616.078 0 556.628 XINC 0.001
TYPE 2 596.031 0 549.324 XINC 0.001
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TYPE 2 600.876 0 558.073 XINC 0.001
TYPE 2 603.783 0 563.323 XINC 0.001
TYPE 3 583.641 0 555.84 XINC 0.001
TYPE 3 586.548 0 561.092 XINC 0.001
TYPE 3 588.487 0 564.592 XINC 0.001
TYPE 3 591.395 0 569.843 XINC 0.001
LOAD GENERATION 1
TYPE 1 610.95 0 541.173 XINC 0.001
TYPE 1 613.872 0 546.413 XINC 0.001
TYPE 1 615.821 0 549.906 XINC 0.001
TYPE 1 618.744 0 555.146 XINC 0.001
TYPE 2 598.674 0 547.905 XINC 0.001
TYPE 2 601.597 0 553.145 XINC 0.001
TYPE 2 603.546 0 556.639 XINC 0.001
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TYPE 3 589.228 0 559.701 XINC 0.001
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TYPE 3 594.101 0 568.438 XINC 0.001
LOAD GENERATION 1
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TYPE 1 618.466 0 548.426 XINC 0.001
TYPE 1 621.405 0 553.657 XINC 0.001
TYPE 2 601.313 0 546.477 XINC 0.001
TYPE 2 604.252 0 551.709 XINC 0.001
TYPE 2 606.212 0 555.196 XINC 0.001

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LOAD GENERATION 1
TYPE 1 616.181 0 538.234 XINC 0.001
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TYPE 1 624.061 0 552.159 XINC 0.001
TYPE 2 603.947 0 545.041 XINC 0.001
TYPE 2 606.902 0 550.264 XINC 0.001
TYPE 2 608.873 0 553.745 XINC 0.001
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TYPE 3 594.573 0 556.896 XINC 0.001
TYPE 3 596.544 0 560.379 XINC 0.001
TYPE 3 599.5 0 565.603 XINC 0.001
LOAD GENERATION 1
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TYPE 1 626.712 0 550.653 XINC 0.001
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TYPE 2 609.548 0 548.811 XINC 0.001
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TYPE 2 614.501 0 557.499 XINC 0.001
TYPE 3 594.267 0 550.266 XINC 0.001
TYPE 3 597.239 0 555.481 XINC 0.001
TYPE 3 599.221 0 558.958 XINC 0.001
TYPE 3 602.193 0 564.172 XINC 0.001
LOAD GENERATION 1
TYPE 1 621.393 0 535.263 XINC 0.001
TYPE 1 624.38 0 540.466 XINC 0.001
TYPE 1 626.372 0 543.935 XINC 0.001
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TYPE 2 609.202 0 542.146 XINC 0.001
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TYPE 2 614.181 0 550.819 XINC 0.001
TYPE 2 617.169 0 556.023 XINC 0.001
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TYPE 3 599.901 0 554.058 XINC 0.001
TYPE 3 601.894 0 557.528 XINC 0.001
TYPE 3 604.882 0 562.734 XINC 0.001
LOAD GENERATION 1
TYPE 1 623.993 0 533.765 XINC 0.001
TYPE 1 626.996 0 538.96 XINC 0.001
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TYPE 1 632.001 0 547.617 XINC 0.001
TYPE 2 611.823 0 540.685 XINC 0.001
TYPE 2 614.826 0 545.88 XINC 0.001
TYPE 2 616.829 0 549.344 XINC 0.001
TYPE 2 619.832 0 554.538 XINC 0.001
TYPE 3 599.554 0 547.43 XINC 0.001
TYPE 3 602.559 0 552.626 XINC 0.001
TYPE 3 604.562 0 556.09 XINC 0.001
TYPE 3 607.566 0 561.287 XINC 0.001
LOAD GENERATION 1
TYPE 1 626.587 0 532.26 XINC 0.001
TYPE 1 629.607 0 537.445 XINC 0.001
TYPE 1 631.62 0 540.901 XINC 0.001
TYPE 1 634.639 0 546.086 XINC 0.001
TYPE 2 614.439 0 539.217 XINC 0.001
TYPE 2 617.458 0 544.403 XINC 0.001
TYPE 2 619.472 0 547.86 XINC 0.001
TYPE 2 622.491 0 553.045 XINC 0.001
TYPE 3 602.191 0 546 XINC 0.001
TYPE 3 605.212 0 551.187 XINC 0.001
TYPE 3 607.226 0 554.645 XINC 0.001
TYPE 3 610.246 0 559.832 XINC 0.001
LOAD GENERATION 1
TYPE 1 629.178 0 530.746 XINC 0.001
TYPE 1 632.213 0 535.922 XINC 0.001
TYPE 1 634.236 0 539.372 XINC 0.001
TYPE 1 637.272 0 544.548 XINC 0.001
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TYPE 2 620.086 0 542.917 XINC 0.001
TYPE 2 622.11 0 546.368 XINC 0.001
TYPE 2 625.145 0 551.544 XINC 0.001
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TYPE 3 607.861 0 549.739 XINC 0.001  
TYPE 3 609.885 0 553.191 XINC 0.001  
TYPE 3 612.921 0 558.368 XINC 0.001  
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TYPE 1 631.763 0 529.224 XINC 0.001  
TYPE 1 634.814 0 534.391 XINC 0.001  
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TYPE 1 639.9 0 543.001 XINC 0.001  
TYPE 2 619.658 0 536.257 XINC 0.001  
TYPE 2 622.709 0 541.424 XINC 0.001  
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TYPE 3 610.505 0 548.283 XINC 0.001  
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TYPE 3 615.592 0 556.897 XINC 0.001  
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TYPE 2 627.372 0 543.36 XINC 0.001  
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TYPE 3 613.144 0 546.819 XINC 0.001  
TYPE 3 615.19 0 550.258 XINC 0.001  
TYPE 3 618.258 0 555.417 XINC 0.001  
LOAD GENERATION 1  
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TYPE 1 640.003 0 531.305 XINC 0.001  
TYPE 1 642.058 0 534.736 XINC 0.001  
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TYPE 2 624.858 0 533.264 XINC 0.001  
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TYPE 3 612.695 0 540.197 XINC 0.001  
TYPE 3 615.779 0 545.347 XINC 0.001  
TYPE 3 617.836 0 548.779 XINC 0.001  
TYPE 3 620.92 0 553.929 XINC 0.001  
LOAD GENERATION 1  
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TYPE 1 642.59 0 529.75 XINC 0.001  
TYPE 1 644.656 0 533.175 XINC 0.001  
TYPE 1 647.755 0 538.313 XINC 0.001  
TYPE 2 627.451 0 531.756 XINC 0.001  
TYPE 2 630.55 0 536.894 XINC 0.001  
TYPE 2 632.617 0 540.32 XINC 0.001  
TYPE 2 635.716 0 545.458 XINC 0.001  
TYPE 3 615.31 0 538.726 XINC 0.001  
TYPE 3 618.41 0 543.866 XINC 0.001  
TYPE 3 620.477 0 547.293 XINC 0.001  
TYPE 3 623.577 0 552.433 XINC 0.001  
LOAD GENERATION 1  
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TYPE 1 645.172 0 528.187 XINC 0.001  
TYPE 1 647.249 0 531.606 XINC 0.001  
TYPE 1 650.363 0 536.734 XINC 0.001  
TYPE 2 630.04 0 530.24 XINC 0.001  
TYPE 2 633.155 0 535.369 XINC 0.001  
TYPE 2 635.232 0 538.788 XINC 0.001  
TYPE 2 638.347 0 543.916 XINC 0.001  
TYPE 3 617.92 0 537.247 XINC 0.001  
TYPE 3 621.036 0 542.378 XINC 0.001  
TYPE 3 623.113 0 545.798 XINC 0.001  
TYPE 3 626.229 0 550.928 XINC 0.001  
LOAD GENERATION 1  
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TYPE 1 652.967 0 535.147 XINC 0.001  
TYPE 2 632.624 0 528.715 XINC 0.001  
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TYPE 3 620.526 0 535.76 XINC 0.001



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TYPE 3 623.657 0 540.881 XINC 0.001
TYPE 3 625.745 0 544.295 XINC 0.001
TYPE 3 628.877 0 549.416 XINC 0.001
LOAD GENERATION 1
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TYPE 1 650.323 0 525.037 XINC 0.001
TYPE 1 652.42 0 528.443 XINC 0.001
TYPE 1 655.566 0 533.552 XINC 0.001
TYPE 2 635.203 0 527.183 XINC 0.001
TYPE 2 638.35 0 532.293 XINC 0.001
TYPE 2 640.447 0 535.699 XINC 0.001
TYPE 2 643.594 0 540.808 XINC 0.001
TYPE 3 623.127 0 534.265 XINC 0.001
TYPE 3 626.274 0 539.376 XINC 0.001
TYPE 3 628.372 0 542.784 XINC 0.001
TYPE 3 631.52 0 547.895 XINC 0.001
LOAD GENERATION 1
TYPE 1 649.728 0 518.351 XINC 0.001
TYPE 1 652.89 0 523.45 XINC 0.001
TYPE 1 654.998 0 526.85 XINC 0.001
TYPE 1 658.16 0 531.949 XINC 0.001
TYPE 2 637.777 0 525.643 XINC 0.001
TYPE 2 640.94 0 530.743 XINC 0.001
TYPE 2 643.048 0 534.143 XINC 0.001
TYPE 2 646.21 0 539.242 XINC 0.001
TYPE 3 625.723 0 532.762 XINC 0.001
TYPE 3 628.886 0 537.864 XINC 0.001
TYPE 3 630.995 0 541.265 XINC 0.001
TYPE 3 634.158 0 546.366 XINC 0.001
LOAD GENERATION 1
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TYPE 1 655.453 0 521.855 XINC 0.001
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TYPE 1 660.749 0 530.338 XINC 0.001
TYPE 2 640.347 0 524.095 XINC 0.001
TYPE 2 643.525 0 529.185 XINC 0.001
TYPE 2 645.644 0 532.578 XINC 0.001
TYPE 2 648.822 0 537.668 XINC 0.001
TYPE 3 628.315 0 531.252 XINC 0.001
TYPE 3 631.494 0 536.343 XINC 0.001
TYPE 3 633.613 0 539.737 XINC 0.001
TYPE 3 636.792 0 544.829 XINC 0.001
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TYPE 1 658.011 0 520.253 XINC 0.001
TYPE 1 660.14 0 523.639 XINC 0.001
TYPE 1 663.333 0 528.719 XINC 0.001
TYPE 2 642.912 0 522.539 XINC 0.001
TYPE 2 646.106 0 527.619 XINC 0.001
TYPE 2 648.235 0 531.006 XINC 0.001
TYPE 2 651.429 0 536.086 XINC 0.001
TYPE 3 630.902 0 529.733 XINC 0.001
TYPE 3 634.096 0 534.814 XINC 0.001
TYPE 3 636.226 0 538.202 XINC 0.001
TYPE 3 639.421 0 543.284 XINC 0.001
LOAD GENERATION 1
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TYPE 1 660.564 0 518.642 XINC 0.001
TYPE 1 662.703 0 522.022 XINC 0.001
TYPE 1 665.912 0 527.092 XINC 0.001
TYPE 2 645.472 0 520.975 XINC 0.001
TYPE 2 648.682 0 526.045 XINC 0.001
TYPE 2 650.821 0 529.425 XINC 0.001
TYPE 2 654.03 0 534.496 XINC 0.001
TYPE 3 633.484 0 528.206 XINC 0.001
TYPE 3 636.694 0 533.277 XINC 0.001
TYPE 3 638.835 0 536.659 XINC 0.001
TYPE 3 642.045 0 541.73 XINC 0.001
LOAD GENERATION 1
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TYPE 1 663.112 0 517.024 XINC 0.001
TYPE 1 665.262 0 520.397 XINC 0.001
TYPE 1 668.486 0 525.457 XINC 0.001
TYPE 2 648.027 0 519.403 XINC 0.001
TYPE 2 651.252 0 524.464 XINC 0.001
TYPE 2 653.402 0 527.837 XINC 0.001
TYPE 2 656.627 0 532.897 XINC 0.001
TYPE 3 636.062 0 526.671 XINC 0.001
TYPE 3 639.288 0 531.733 XINC 0.001
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TYPE 3 644.664 0 540.169 XINC 0.001
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TYPE 1 665.655 0 515.398 XINC 0.001
TYPE 1 667.815 0 518.764 XINC 0.001
TYPE 1 671.056 0 523.814 XINC 0.001
TYPE 2 650.578 0 517.824 XINC 0.001
TYPE 2 653.818 0 522.874 XINC 0.001
TYPE 2 655.979 0 526.241 XINC 0.001
TYPE 2 659.219 0 531.291 XINC 0.001
TYPE 3 638.635 0 525.128 XINC 0.001
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TYPE 3 644.037 0 533.548 XINC 0.001
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TYPE 1 673.619 0 522.163 XINC 0.001
TYPE 2 653.123 0 516.236 XINC 0.001
TYPE 2 656.38 0 521.276 XINC 0.001
TYPE 2 658.55 0 524.637 XINC 0.001
TYPE 2 661.806 0 529.677 XINC 0.001
TYPE 3 641.203 0 523.577 XINC 0.001
TYPE 3 644.46 0 528.619 XINC 0.001
TYPE 3 646.631 0 531.98 XINC 0.001
TYPE 3 649.888 0 537.022 XINC 0.001
LOAD GENERATION 1
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TYPE 1 672.907 0 515.475 XINC 0.001
TYPE 1 676.178 0 520.505 XINC 0.001
TYPE 2 655.664 0 514.641 XINC 0.001
TYPE 2 658.936 0 519.671 XINC 0.001
TYPE 2 661.117 0 523.024 XINC 0.001
TYPE 2 664.388 0 528.055 XINC 0.001
TYPE 3 643.766 0 522.018 XINC 0.001
TYPE 3 647.039 0 527.05 XINC 0.001
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TYPE 3 651.805 0 528.822 XINC 0.001
TYPE 3 655.093 0 533.843 XINC 0.001
LOAD GENERATION 1
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TYPE 1 681.28 0 517.164 XINC 0.001
TYPE 2 660.73 0 511.426 XINC 0.001
TYPE 2 664.033 0 516.436 XINC 0.001
TYPE 2 666.235 0 519.776 XINC 0.001
TYPE 2 669.537 0 524.786 XINC 0.001
TYPE 3 648.878 0 518.878 XINC 0.001
TYPE 3 652.182 0 523.889 XINC 0.001
TYPE 3 654.384 0 527.23 XINC 0.001
TYPE 3 657.688 0 532.242 XINC 0.001
LOAD GENERATION 1
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TYPE 1 678.294 0 507.15 XINC 0.001
TYPE 1 680.506 0 510.483 XINC 0.001
TYPE 1 683.824 0 515.482 XINC 0.001
TYPE 2 663.256 0 509.808 XINC 0.001
TYPE 2 666.574 0 514.807 XINC 0.001
TYPE 2 668.786 0 518.141 XINC 0.001
TYPE 2 672.104 0 523.14 XINC 0.001
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TYPE 1 686.362 0 513.792 XINC 0.001
TYPE 2 665.777 0 508.181 XINC 0.001
TYPE 2 669.11 0 513.17 XINC 0.001
TYPE 2 671.333 0 516.497 XINC 0.001
TYPE 2 674.666 0 521.486 XINC 0.001
TYPE 3 653.971 0 515.705 XINC 0.001
TYPE 3 657.305 0 520.696 XINC 0.001
TYPE 3 659.528 0 524.024 XINC 0.001
TYPE 3 662.863 0 529.015 XINC 0.001
LOAD GENERATION 1
TYPE 1 679.965 0 498.817 XINC 0.001
TYPE 1 683.314 0 503.796 XINC 0.001
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TYPE 1 688.895 0 512.094 XINC 0.001
TYPE 2 668.293 0 506.547 XINC 0.001
TYPE 2 671.641 0 511.526 XINC 0.001
TYPE 2 673.874 0 514.845 XINC 0.001
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TYPE 3 659.86 0 519.088 XINC 0.001
TYPE 3 662.093 0 522.408 XINC 0.001
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LOAD GENERATION 1
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TYPE 3 664.652 0 520.785 XINC 0.001
TYPE 3 668.018 0 525.756 XINC 0.001
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TYPE 1 688.313 0 500.411 XINC 0.001
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TYPE 1 693.945 0 508.675 XINC 0.001
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TYPE 3 664.953 0 515.848 XINC 0.001
TYPE 3 667.207 0 519.154 XINC 0.001
TYPE 3 670.587 0 524.114 XINC 0.001
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TYPE 1 696.462 0 506.954 XINC 0.001
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TYPE 2 681.467 0 509.844 XINC 0.001
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TYPE 3 664.097 0 509.266 XINC 0.001
TYPE 3 667.493 0 514.216 XINC 0.001
TYPE 3 669.757 0 517.516 XINC 0.001
TYPE 3 673.152 0 522.465 XINC 0.001
LOAD GENERATION 1
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TYPE 1 693.291 0 496.996 XINC 0.001
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TYPE 2 678.305 0 499.932 XINC 0.001
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TYPE 3 670.027 0 512.576 XINC 0.001
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TYPE 3 675.712 0 520.808 XINC 0.001
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LOAD GENERATION 1  
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TYPE 1 701.48 0 503.488 XINC 0.001  
TYPE 2 680.795 0 498.259 XINC 0.001  
TYPE 2 684.22 0 503.186 XINC 0.001  
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TYPE 2 689.929 0 511.398 XINC 0.001  
TYPE 3 669.13 0 506 XINC 0.001  
TYPE 3 672.556 0 510.929 XINC 0.001  
TYPE 3 674.84 0 514.214 XINC 0.001  
TYPE 3 678.267 0 519.143 XINC 0.001  
LOAD GENERATION 1  
TYPE 1 694.808 0 488.634 XINC 0.001  
TYPE 1 698.248 0 493.55 XINC 0.001  
TYPE 1 700.541 0 496.828 XINC 0.001  
TYPE 1 703.981 0 501.743 XINC 0.001  
TYPE 2 683.28 0 496.578 XINC 0.001  
TYPE 2 686.72 0 501.495 XINC 0.001  
TYPE 2 689.014 0 504.772 XINC 0.001  
TYPE 2 692.454 0 509.689 XINC 0.001  
TYPE 3 671.639 0 504.355 XINC 0.001  
TYPE 3 675.08 0 509.273 XINC 0.001  
TYPE 3 677.375 0 512.552 XINC 0.001  
TYPE 3 680.816 0 517.47 XINC 0.001  
LOAD GENERATION 1  
TYPE 1 697.263 0 486.91 XINC 0.001  
TYPE 1 700.718 0 491.816 XINC 0.001  
TYPE 1 703.022 0 495.086 XINC 0.001  
TYPE 1 706.477 0 499.991 XINC 0.001  
TYPE 2 685.76 0 494.89 XINC 0.001  
TYPE 2 689.215 0 499.796 XINC 0.001  
TYPE 2 691.519 0 503.066 XINC 0.001  
TYPE 2 694.975 0 507.972 XINC 0.001  
TYPE 3 674.143 0 502.703 XINC 0.001  
TYPE 3 677.6 0 507.61 XINC 0.001  
TYPE 3 679.904 0 510.882 XINC 0.001  
TYPE 3 683.36 0 515.789 XINC 0.001  
LOAD GENERATION 1  
TYPE 1 699.713 0 485.179 XINC 0.001  
TYPE 1 703.183 0 490.074 XINC 0.001  
TYPE 1 705.497 0 493.337 XINC 0.001  
TYPE 1 708.967 0 498.231 XINC 0.001  
TYPE 2 688.235 0 493.194 XINC 0.001  
TYPE 2 691.705 0 498.089 XINC 0.001  
TYPE 2 694.019 0 501.352 XINC 0.001  
TYPE 2 697.49 0 506.248 XINC 0.001  
TYPE 3 676.642 0 501.043 XINC 0.001  
TYPE 3 680.113 0 505.939 XINC 0.001  
TYPE 3 682.428 0 509.204 XINC 0.001  
TYPE 3 685.899 0 514.101 XINC 0.001  
LOAD GENERATION 1  
TYPE 1 702.158 0 483.44 XINC 0.001  
TYPE 1 705.643 0 488.324 XINC 0.001  
TYPE 1 707.967 0 491.58 XINC 0.001  
TYPE 1 711.452 0 496.464 XINC 0.001  
TYPE 2 690.704 0 491.49 XINC 0.001  
TYPE 2 694.19 0 496.375 XINC 0.001  
TYPE 2 696.513 0 499.631 XINC 0.001  
TYPE 2 699.999 0 504.515 XINC 0.001  
TYPE 3 679.135 0 499.375 XINC 0.001  
TYPE 3 682.622 0 504.261 XINC 0.001  
TYPE 3 684.947 0 507.518 XINC 0.001  
TYPE 3 688.433 0 512.404 XINC 0.001  
LOAD GENERATION 1  
TYPE 1 704.597 0 481.694 XINC 0.001  
TYPE 1 708.097 0 486.567 XINC 0.001  
TYPE 1 710.431 0 489.816 XINC 0.001  
TYPE 1 713.931 0 494.689 XINC 0.001  
TYPE 2 693.168 0 489.779 XINC 0.001  
TYPE 2 696.669 0 494.653 XINC 0.001  
TYPE 2 699.003 0 497.902 XINC 0.001  
TYPE 2 702.503 0 502.776 XINC 0.001  
TYPE 3 681.624 0 497.699 XINC 0.001  
TYPE 3 685.126 0 502.575 XINC 0.001  
TYPE 3 687.46 0 505.825 XINC 0.001  
TYPE 3 690.962 0 510.7 XINC 0.001  
LOAD GENERATION 1

```
TYPE 1 707.031 0 479.94 XINC 0.001
TYPE 1 710.546 0 484.802 XINC 0.001
TYPE 1 712.89 0 488.044 XINC 0.001
TYPE 1 716.405 0 492.906 XINC 0.001
TYPE 2 695.627 0 488.061 XINC 0.001
TYPE 2 699.143 0 492.923 XINC 0.001
TYPE 2 701.486 0 496.165 XINC 0.001
TYPE 2 705.002 0 501.028 XINC 0.001
TYPE 3 684.107 0 496.016 XINC 0.001
TYPE 3 687.624 0 500.881 XINC 0.001
TYPE 3 689.969 0 504.123 XINC 0.001
TYPE 3 693.485 0 508.988 XINC 0.001
LOAD GENERATION 1
TYPE 1 709.459 0 478.178 XINC 0.001
TYPE 1 712.99 0 483.03 XINC 0.001
TYPE 1 715.343 0 486.264 XINC 0.001
TYPE 1 718.874 0 491.116 XINC 0.001
TYPE 2 698.08 0 486.334 XINC 0.001
TYPE 2 701.611 0 491.186 XINC 0.001
TYPE 2 703.965 0 494.421 XINC 0.001
TYPE 2 707.496 0 499.273 XINC 0.001
TYPE 3 686.585 0 494.325 XINC 0.001
TYPE 3 690.117 0 499.179 XINC 0.001
TYPE 3 692.472 0 502.415 XINC 0.001
TYPE 3 696.003 0 507.268 XINC 0.001
LOAD GENERATION 1
TYPE 1 711.882 0 476.41 XINC 0.001
TYPE 1 715.428 0 481.25 XINC 0.001
TYPE 1 717.791 0 484.477 XINC 0.001
TYPE 1 721.337 0 489.318 XINC 0.001
TYPE 2 700.529 0 484.6 XINC 0.001
TYPE 2 704.074 0 489.441 XINC 0.001
TYPE 2 706.438 0 492.669 XINC 0.001
TYPE 2 709.984 0 497.51 XINC 0.001
TYPE 3 689.058 0 492.627 XINC 0.001
TYPE 3 692.605 0 497.47 XINC 0.001
TYPE 3 694.969 0 500.698 XINC 0.001
TYPE 3 698.516 0 505.54 XINC 0.001
LOAD GENERATION 1
TYPE 1 714.3 0 474.633 XINC 0.001
TYPE 1 717.86 0 479.463 XINC 0.001
TYPE 1 720.234 0 482.682 XINC 0.001
TYPE 1 723.794 0 487.512 XINC 0.001
TYPE 2 702.972 0 482.859 XINC 0.001
TYPE 2 706.532 0 487.689 XINC 0.001
TYPE 2 708.906 0 490.909 XINC 0.001
TYPE 2 712.466 0 495.739 XINC 0.001
TYPE 3 691.526 0 490.921 XINC 0.001
TYPE 3 695.088 0 495.753 XINC 0.001
TYPE 3 697.462 0 498.974 XINC 0.001
TYPE 3 701.024 0 503.805 XINC 0.001
LOAD GENERATION 1
TYPE 1 716.712 0 472.849 XINC 0.001
TYPE 1 720.287 0 477.668 XINC 0.001
TYPE 1 722.67 0 480.88 XINC 0.001
TYPE 1 726.246 0 485.699 XINC 0.001
TYPE 2 705.409 0 481.11 XINC 0.001
TYPE 2 708.984 0 485.929 XINC 0.001
TYPE 2 711.368 0 489.142 XINC 0.001
TYPE 2 714.944 0 493.961 XINC 0.001
TYPE 3 693.988 0 489.207 XINC 0.001
TYPE 3 697.565 0 494.028 XINC 0.001
TYPE 3 699.949 0 497.242 XINC 0.001
TYPE 3 703.526 0 502.062 XINC 0.001
LOAD GENERATION 1
TYPE 1 719.118 0 471.058 XINC 0.001
TYPE 1 722.708 0 475.866 XINC 0.001
TYPE 1 725.102 0 479.071 XINC 0.001
TYPE 1 728.692 0 483.878 XINC 0.001
TYPE 2 707.841 0 479.354 XINC 0.001
TYPE 2 711.431 0 484.162 XINC 0.001
TYPE 2 713.825 0 487.367 XINC 0.001
TYPE 2 717.415 0 492.175 XINC 0.001
TYPE 3 696.445 0 487.486 XINC 0.001
TYPE 3 700.037 0 492.295 XINC 0.001
TYPE 3 702.431 0 495.502 XINC 0.001
TYPE 3 706.022 0 500.311 XINC 0.001
LOAD GENERATION 1
TYPE 1 721.519 0 469.259 XINC 0.001
```

```
TYPE 1 725.124 0 474.056 XINC 0.001
TYPE 1 727.527 0 477.253 XINC 0.001
TYPE 1 731.132 0 482.05 XINC 0.001
TYPE 2 710.268 0 477.59 XINC 0.001
TYPE 2 713.873 0 482.387 XINC 0.001
TYPE 2 716.276 0 485.584 XINC 0.001
TYPE 2 719.881 0 490.381 XINC 0.001
TYPE 3 698.897 0 485.757 XINC 0.001
TYPE 3 702.503 0 490.556 XINC 0.001
TYPE 3 704.907 0 493.754 XINC 0.001
TYPE 3 708.514 0 498.553 XINC 0.001
LOAD GENERATION 1
TYPE 1 723.915 0 467.453 XINC 0.001
TYPE 1 727.534 0 472.239 XINC 0.001
TYPE 1 729.947 0 475.429 XINC 0.001
TYPE 1 733.567 0 480.214 XINC 0.001
TYPE 2 712.689 0 475.818 XINC 0.001
TYPE 2 716.309 0 480.604 XINC 0.001
TYPE 2 718.722 0 483.795 XINC 0.001
TYPE 2 722.342 0 488.58 XINC 0.001
TYPE 3 701.344 0 484.021 XINC 0.001
TYPE 3 704.965 0 488.808 XINC 0.001
TYPE 3 707.378 0 492 XINC 0.001
TYPE 3 710.999 0 496.787 XINC 0.001
LOAD GENERATION 1
TYPE 1 726.305 0 465.64 XINC 0.001
TYPE 1 729.939 0 470.414 XINC 0.001
TYPE 1 732.362 0 473.597 XINC 0.001
TYPE 1 735.996 0 478.371 XINC 0.001
TYPE 2 715.104 0 474.039 XINC 0.001
TYPE 2 718.739 0 478.814 XINC 0.001
TYPE 2 721.162 0 481.997 XINC 0.001
TYPE 2 724.797 0 486.772 XINC 0.001
TYPE 3 703.785 0 482.277 XINC 0.001
TYPE 3 707.42 0 487.053 XINC 0.001
TYPE 3 709.844 0 490.237 XINC 0.001
TYPE 3 713.48 0 495.013 XINC 0.001
LOAD GENERATION 1
TYPE 1 728.689 0 463.819 XINC 0.001
TYPE 1 732.338 0 468.582 XINC 0.001
TYPE 1 734.771 0 471.757 XINC 0.001
TYPE 1 738.42 0 476.52 XINC 0.001
TYPE 2 717.515 0 472.253 XINC 0.001
TYPE 2 721.164 0 477.016 XINC 0.001
TYPE 2 723.597 0 480.192 XINC 0.001
TYPE 2 727.246 0 484.955 XINC 0.001
TYPE 3 706.22 0 480.525 XINC 0.001
TYPE 3 709.871 0 485.29 XINC 0.001
TYPE 3 712.304 0 488.467 XINC 0.001
TYPE 3 715.955 0 493.232 XINC 0.001
LOAD GENERATION 1
TYPE 1 731.068 0 461.991 XINC 0.001
TYPE 1 734.731 0 466.742 XINC 0.001
TYPE 1 737.174 0 469.91 XINC 0.001
TYPE 1 740.837 0 474.662 XINC 0.001
TYPE 2 719.919 0 470.459 XINC 0.001
TYPE 2 723.583 0 475.211 XINC 0.001
TYPE 2 726.026 0 478.379 XINC 0.001
TYPE 2 729.69 0 483.132 XINC 0.001
TYPE 3 708.651 0 478.766 XINC 0.001
TYPE 3 712.316 0 483.52 XINC 0.001
TYPE 3 714.759 0 486.689 XINC 0.001
TYPE 3 718.424 0 491.443 XINC 0.001
LOAD GENERATION 1
TYPE 1 733.441 0 460.155 XINC 0.001
TYPE 1 737.119 0 464.896 XINC 0.001
TYPE 1 739.571 0 468.056 XINC 0.001
TYPE 1 743.249 0 472.796 XINC 0.001
TYPE 2 722.319 0 468.658 XINC 0.001
TYPE 2 725.997 0 473.399 XINC 0.001
TYPE 2 728.45 0 476.559 XINC 0.001
TYPE 2 732.128 0 481.3 XINC 0.001
TYPE 3 711.075 0 477 XINC 0.001
TYPE 3 714.755 0 481.742 XINC 0.001
TYPE 3 717.208 0 484.904 XINC 0.001
TYPE 3 720.888 0 489.646 XINC 0.001
LOAD GENERATION 1
TYPE 1 735.808 0 458.313 XINC 0.001
TYPE 1 739.501 0 463.041 XINC 0.001
```

TYPE 1 741.963 0 466.194 XINC 0.001  
TYPE 1 745.656 0 470.923 XINC 0.001  
TYPE 2 724.712 0 466.85 XINC 0.001  
TYPE 2 728.405 0 471.579 XINC 0.001  
TYPE 2 730.868 0 474.732 XINC 0.001  
TYPE 2 734.561 0 479.461 XINC 0.001  
TYPE 3 713.495 0 475.226 XINC 0.001  
TYPE 3 717.189 0 479.957 XINC 0.001  
TYPE 3 719.652 0 483.111 XINC 0.001  
TYPE 3 723.346 0 487.842 XINC 0.001  
LOAD GENERATION 1  
TYPE 1 738.17 0 456.462 XINC 0.001  
TYPE 1 741.877 0 461.18 XINC 0.001  
TYPE 1 744.349 0 464.325 XINC 0.001  
TYPE 1 748.056 0 469.043 XINC 0.001  
TYPE 2 727.1 0 465.034 XINC 0.001  
TYPE 2 730.808 0 469.752 XINC 0.001  
TYPE 2 733.28 0 472.897 XINC 0.001  
TYPE 2 736.988 0 477.615 XINC 0.001  
TYPE 3 715.909 0 473.445 XINC 0.001  
TYPE 3 719.617 0 478.164 XINC 0.001  
TYPE 3 722.09 0 481.31 XINC 0.001  
TYPE 3 725.799 0 486.03 XINC 0.001  
LOAD GENERATION 1  
TYPE 1 740.525 0 454.605 XINC 0.001  
TYPE 1 744.247 0 459.311 XINC 0.001  
TYPE 1 746.729 0 462.449 XINC 0.001  
TYPE 1 750.451 0 467.155 XINC 0.001  
TYPE 2 729.483 0 463.21 XINC 0.001  
TYPE 2 733.205 0 467.917 XINC 0.001  
TYPE 2 735.686 0 471.055 XINC 0.001  
TYPE 2 739.409 0 475.761 XINC 0.001  
TYPE 3 718.317 0 471.656 XINC 0.001  
TYPE 3 722.04 0 476.364 XINC 0.001  
TYPE 3 724.523 0 479.503 XINC 0.001  
TYPE 3 728.246 0 484.211 XINC 0.001  
PERFORM ANALYSIS  
FINISH

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# STAAD MODEL INPUT

- EXAMPLE LL (MAXIMIZING FLOORBEAM POSITIVE MOMENT)



SLAVE	RIGID	MASTER	1289	JOINT	409
SLAVE	RIGID	MASTER	1337	JOINT	467
SLAVE	RIGID	MASTER	1290	JOINT	410
SLAVE	RIGID	MASTER	1291	JOINT	411
SLAVE	RIGID	MASTER	1339	JOINT	486
SLAVE	RIGID	MASTER	1292	JOINT	412
SLAVE	RIGID	MASTER	1293	JOINT	413
SLAVE	RIGID	MASTER	1342	JOINT	508
SLAVE	RIGID	MASTER	1294	JOINT	414
SLAVE	RIGID	MASTER	1295	JOINT	415
SLAVE	RIGID	MASTER	1344	JOINT	511
SLAVE	RIGID	MASTER	1346	JOINT	583
SLAVE	RIGID	MASTER	1296	JOINT	416
SLAVE	RIGID	MASTER	1351	JOINT	588
SLAVE	RIGID	MASTER	1347	JOINT	584
SLAVE	RIGID	MASTER	1297	JOINT	417
SLAVE	RIGID	MASTER	1349	JOINT	586
SLAVE	RIGID	MASTER	1298	JOINT	419
SLAVE	RIGID	MASTER	1299	JOINT	420
SLAVE	RIGID	MASTER	1354	JOINT	600
SLAVE	RIGID	MASTER	1300	JOINT	421
SLAVE	RIGID	MASTER	1301	JOINT	422
SLAVE	RIGID	MASTER	1355	JOINT	623
SLAVE	RIGID	MASTER	1302	JOINT	423
SLAVE	RIGID	MASTER	1303	JOINT	424
SLAVE	RIGID	MASTER	1358	JOINT	633
SLAVE	RIGID	MASTER	1304	JOINT	425
SLAVE	RIGID	MASTER	1305	JOINT	426
SLAVE	RIGID	MASTER	1360	JOINT	688
SLAVE	RIGID	MASTER	1306	JOINT	427
SLAVE	RIGID	MASTER	1307	JOINT	428
SLAVE	RIGID	MASTER	1362	JOINT	696
SLAVE	RIGID	MASTER	1363	JOINT	704
SLAVE	RIGID	MASTER	1308	JOINT	429
SLAVE	RIGID	MASTER	1366	JOINT	721
SLAVE	RIGID	MASTER	1309	JOINT	430
SLAVE	RIGID	MASTER	1368	JOINT	737
SLAVE	RIGID	MASTER	1369	JOINT	745
SLAVE	RIGID	MASTER	1310	JOINT	431
SLAVE	RIGID	MASTER	1372	JOINT	762
SLAVE	RIGID	MASTER	1374	JOINT	771
SLAVE	RIGID	MASTER	1376	JOINT	824
SLAVE	RIGID	MASTER	1378	JOINT	826
SLAVE	RIGID	MASTER	1379	JOINT	827
SLAVE	RIGID	MASTER	1311	JOINT	432
SLAVE	RIGID	MASTER	1382	JOINT	830
SLAVE	RIGID	MASTER	1381	JOINT	829
SLAVE	RIGID	MASTER	1380	JOINT	828
SLAVE	RIGID	MASTER	1334	JOINT	456
SLAVE	RIGID	MASTER	1377	JOINT	825
SLAVE	RIGID	MASTER	1375	JOINT	823
SLAVE	RIGID	MASTER	1373	JOINT	765
SLAVE	RIGID	MASTER	1371	JOINT	756
SLAVE	RIGID	MASTER	1370	JOINT	748
SLAVE	RIGID	MASTER	1333	JOINT	455
SLAVE	RIGID	MASTER	1367	JOINT	731
SLAVE	RIGID	MASTER	1332	JOINT	454
SLAVE	RIGID	MASTER	1365	JOINT	715
SLAVE	RIGID	MASTER	1364	JOINT	707
SLAVE	RIGID	MASTER	1331	JOINT	453
SLAVE	RIGID	MASTER	1361	JOINT	690
SLAVE	RIGID	MASTER	1330	JOINT	451
SLAVE	RIGID	MASTER	1329	JOINT	450
SLAVE	RIGID	MASTER	1359	JOINT	687
SLAVE	RIGID	MASTER	1328	JOINT	449
SLAVE	RIGID	MASTER	1327	JOINT	448
SLAVE	RIGID	MASTER	1357	JOINT	632
SLAVE	RIGID	MASTER	1326	JOINT	447
SLAVE	RIGID	MASTER	1325	JOINT	446
SLAVE	RIGID	MASTER	1356	JOINT	624
SLAVE	RIGID	MASTER	1324	JOINT	445
SLAVE	RIGID	MASTER	1323	JOINT	444
SLAVE	RIGID	MASTER	1353	JOINT	594
SLAVE	RIGID	MASTER	1322	JOINT	443
SLAVE	RIGID	MASTER	1321	JOINT	442
SLAVE	RIGID	MASTER	1348	JOINT	585
SLAVE	RIGID	MASTER	1352	JOINT	589
SLAVE	RIGID	MASTER	1336	JOINT	459
SLAVE	RIGID	MASTER	1350	JOINT	587

SLAVE RIGID MASTER 1320 JOINT 441  
 SLAVE RIGID MASTER 1345 JOINT 582  
 SLAVE RIGID MASTER 1343 JOINT 510  
 SLAVE RIGID MASTER 1319 JOINT 440  
 SLAVE RIGID MASTER 1318 JOINT 439  
 SLAVE RIGID MASTER 1341 JOINT 502  
 SLAVE RIGID MASTER 1317 JOINT 438  
 SLAVE RIGID MASTER 1316 JOINT 437  
 SLAVE RIGID MASTER 1340 JOINT 487  
 SLAVE RIGID MASTER 1315 JOINT 436  
 SLAVE RIGID MASTER 1314 JOINT 435  
 SLAVE RIGID MASTER 1338 JOINT 468  
 SLAVE RIGID MASTER 1313 JOINT 434

DEFINE MOVING LOAD

TYPE 1 LOAD 4  
 DIST 0  
 TYPE 2 LOAD 16  
 DIST 0  
 TYPE 3 LOAD 16  
 DIST 0

LOAD GENERATION 55

TYPE 1 -1.011 0 664.41 XINC 3  
 TYPE 1 -1.011 0 670.41 XINC 3  
 TYPE 1 -1.011 0 711.91 XINC 3  
 TYPE 1 -1.011 0 717.91 XINC 3  
 TYPE 2 -15.011 0 664.41 XINC 3  
 TYPE 2 -15.011 0 670.41 XINC 3  
 TYPE 2 -15.011 0 711.91 XINC 3  
 TYPE 2 -15.011 0 717.91 XINC 3  
 TYPE 3 -29.011 0 664.41 XINC 3  
 TYPE 3 -29.011 0 670.41 XINC 3  
 TYPE 3 -29.011 0 711.91 XINC 3  
 TYPE 3 -29.011 0 717.91 XINC 3

LOAD GENERATION 190

TYPE 1 734.185 0 459.58 XINC 3 ZINC -2.323  
 TYPE 1 737.858 0 464.324 XINC 3 ZINC -2.323  
 TYPE 1 763.266 0 497.138 XINC 3 ZINC -2.323  
 TYPE 1 766.939 0 501.882 XINC 3 ZINC -2.323  
 TYPE 2 723.115 0 468.152 XINC 3 ZINC -2.323  
 TYPE 2 726.788 0 472.896 XINC 3 ZINC -2.323  
 TYPE 2 752.196 0 505.709 XINC 3 ZINC -2.323  
 TYPE 2 755.869 0 510.453 XINC 3 ZINC -2.323  
 TYPE 3 712.046 0 476.723 XINC 3 ZINC -2.323  
 TYPE 3 715.719 0 481.467 XINC 3 ZINC -2.323  
 TYPE 3 741.126 0 514.28 XINC 3 ZINC -2.323  
 TYPE 3 744.8 0 519.024 XINC 3 ZINC -2.323

LOAD GENERATION 1

TYPE 1 137.033 0 664.41 XINC 0.001  
 TYPE 1 137.033 0 670.41 XINC 0.001  
 TYPE 1 137.033 0 711.91 XINC 0.001  
 TYPE 1 137.033 0 717.91 XINC 0.001  
 TYPE 2 123.033 0 664.41 XINC 0.001  
 TYPE 2 123.033 0 670.41 XINC 0.001  
 TYPE 2 123.033 0 711.91 XINC 0.001  
 TYPE 2 123.033 0 717.91 XINC 0.001  
 TYPE 3 109.033 0 664.41 XINC 0.001  
 TYPE 3 109.033 0 670.41 XINC 0.001  
 TYPE 3 109.033 0 711.91 XINC 0.001  
 TYPE 3 109.033 0 717.91 XINC 0.001

LOAD GENERATION 1

TYPE 1 140.033 0 664.41 XINC 0.001  
 TYPE 1 140.051 0 670.41 XINC 0.001  
 TYPE 1 140.179 0 711.91 XINC 0.001  
 TYPE 1 140.198 0 717.91 XINC 0.001  
 TYPE 2 126.033 0 664.41 XINC 0.001  
 TYPE 2 126.033 0 670.41 XINC 0.001  
 TYPE 2 126.033 0 711.91 XINC 0.001  
 TYPE 2 126.033 0 717.91 XINC 0.001  
 TYPE 3 112.033 0 664.41 XINC 0.001  
 TYPE 3 112.033 0 670.41 XINC 0.001  
 TYPE 3 112.033 0 711.91 XINC 0.001  
 TYPE 3 112.033 0 717.91 XINC 0.001

LOAD GENERATION 1

TYPE 1 143.033 0 664.391 XINC 0.001  
 TYPE 1 143.07 0 670.391 XINC 0.001  
 TYPE 1 143.326 0 711.891 XINC 0.001  
 TYPE 1 143.363 0 717.89 XINC 0.001  
 TYPE 2 129.033 0 664.41 XINC 0.001  
 TYPE 2 129.033 0 670.41 XINC 0.001

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TYPE 2 129.033 0 711.91 XINC 0.001
TYPE 2 129.033 0 717.91 XINC 0.001
TYPE 3 115.033 0 664.41 XINC 0.001
TYPE 3 115.033 0 670.41 XINC 0.001
TYPE 3 115.033 0 711.91 XINC 0.001
TYPE 3 115.033 0 717.91 XINC 0.001
LOAD GENERATION 1
TYPE 1 146.033 0 664.368 XINC 0.001
TYPE 1 146.088 0 670.368 XINC 0.001
TYPE 1 146.472 0 711.866 XINC 0.001
TYPE 1 146.528 0 717.866 XINC 0.001
TYPE 2 132.033 0 664.41 XINC 0.001
TYPE 2 132.033 0 670.41 XINC 0.001
TYPE 2 132.033 0 711.91 XINC 0.001
TYPE 2 132.033 0 717.91 XINC 0.001
TYPE 3 118.033 0 664.41 XINC 0.001
TYPE 3 118.033 0 670.41 XINC 0.001
TYPE 3 118.033 0 711.91 XINC 0.001
TYPE 3 118.033 0 717.91 XINC 0.001
LOAD GENERATION 1
TYPE 1 149.033 0 664.336 XINC 0.001
TYPE 1 149.107 0 670.336 XINC 0.001
TYPE 1 149.619 0 711.832 XINC 0.001
TYPE 1 149.693 0 717.832 XINC 0.001
TYPE 2 135.033 0 664.41 XINC 0.001
TYPE 2 135.033 0 670.41 XINC 0.001
TYPE 2 135.033 0 711.91 XINC 0.001
TYPE 2 135.033 0 717.91 XINC 0.001
TYPE 3 121.033 0 664.41 XINC 0.001
TYPE 3 121.033 0 670.41 XINC 0.001
TYPE 3 121.033 0 711.91 XINC 0.001
TYPE 3 121.033 0 717.91 XINC 0.001
LOAD GENERATION 1
TYPE 1 152.032 0 664.294 XINC 0.001
TYPE 1 152.125 0 670.294 XINC 0.001
TYPE 1 152.765 0 711.789 XINC 0.001
TYPE 1 152.857 0 717.788 XINC 0.001
TYPE 2 138.033 0 664.41 XINC 0.001
TYPE 2 138.033 0 670.41 XINC 0.001
TYPE 2 138.033 0 711.91 XINC 0.001
TYPE 2 138.033 0 717.91 XINC 0.001
TYPE 3 124.033 0 664.41 XINC 0.001
TYPE 3 124.033 0 670.41 XINC 0.001
TYPE 3 124.033 0 711.91 XINC 0.001
TYPE 3 124.033 0 717.91 XINC 0.001
LOAD GENERATION 1
TYPE 1 155.032 0 664.243 XINC 0.001
TYPE 1 155.143 0 670.242 XINC 0.001
TYPE 1 155.911 0 711.735 XINC 0.001
TYPE 1 156.022 0 717.734 XINC 0.001
TYPE 2 141.033 0 664.402 XINC 0.001
TYPE 2 141.144 0 670.401 XINC 0.001
TYPE 2 141.912 0 711.898 XINC 0.001
TYPE 2 142.023 0 717.898 XINC 0.001
TYPE 3 127.033 0 664.41 XINC 0.001
TYPE 3 127.033 0 670.41 XINC 0.001
TYPE 3 127.033 0 711.91 XINC 0.001
TYPE 3 127.033 0 717.91 XINC 0.001
LOAD GENERATION 1
TYPE 1 158.031 0 664.183 XINC 0.001
TYPE 1 158.161 0 670.182 XINC 0.001
TYPE 1 159.057 0 711.672 XINC 0.001
TYPE 1 159.186 0 717.671 XINC 0.001
TYPE 2 144.033 0 664.385 XINC 0.001
TYPE 2 144.162 0 670.384 XINC 0.001
TYPE 2 145.058 0 711.878 XINC 0.001
TYPE 2 145.188 0 717.878 XINC 0.001
TYPE 3 130.033 0 664.41 XINC 0.001
TYPE 3 130.033 0 670.41 XINC 0.001
TYPE 3 130.033 0 711.91 XINC 0.001
TYPE 3 130.033 0 717.91 XINC 0.001
LOAD GENERATION 1
TYPE 1 161.031 0 664.114 XINC 0.001
TYPE 1 161.179 0 670.112 XINC 0.001
TYPE 1 162.202 0 711.6 XINC 0.001
TYPE 1 162.35 0 717.598 XINC 0.001
TYPE 2 147.033 0 664.359 XINC 0.001
TYPE 2 147.181 0 670.357 XINC 0.001
TYPE 2 148.205 0 711.849 XINC 0.001

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TYPE 2 148.353 0 717.848 XINC 0.001
TYPE 3 133.033 0 664.41 XINC 0.001
TYPE 3 133.033 0 670.41 XINC 0.001
TYPE 3 133.033 0 711.91 XINC 0.001
TYPE 3 133.033 0 717.91 XINC 0.001
LOAD GENERATION 1
TYPE 1 164.03 0 664.035 XINC 0.001
TYPE 1 164.196 0 670.033 XINC 0.001
TYPE 1 165.348 0 711.517 XINC 0.001
TYPE 1 165.514 0 717.515 XINC 0.001
TYPE 2 150.033 0 664.323 XINC 0.001
TYPE 2 150.199 0 670.321 XINC 0.001
TYPE 2 151.351 0 711.81 XINC 0.001
TYPE 2 151.517 0 717.808 XINC 0.001
TYPE 3 136.033 0 664.41 XINC 0.001
TYPE 3 136.033 0 670.41 XINC 0.001
TYPE 3 136.033 0 711.91 XINC 0.001
TYPE 3 136.033 0 717.91 XINC 0.001
LOAD GENERATION 1
TYPE 1 167.028 0 663.948 XINC 0.001
TYPE 1 167.213 0 669.945 XINC 0.001
TYPE 1 168.493 0 711.425 XINC 0.001
TYPE 1 168.678 0 717.422 XINC 0.001
TYPE 2 153.032 0 664.278 XINC 0.001
TYPE 2 153.217 0 670.276 XINC 0.001
TYPE 2 154.497 0 711.761 XINC 0.001
TYPE 2 154.682 0 717.758 XINC 0.001
TYPE 3 139.033 0 664.41 XINC 0.001
TYPE 3 139.033 0 670.41 XINC 0.001
TYPE 3 139.033 0 711.91 XINC 0.001
TYPE 3 139.033 0 717.91 XINC 0.001
LOAD GENERATION 1
TYPE 1 170.027 0 663.85 XINC 0.001
TYPE 1 170.23 0 669.847 XINC 0.001
TYPE 1 171.638 0 711.323 XINC 0.001
TYPE 1 171.841 0 717.32 XINC 0.001
TYPE 2 156.032 0 664.224 XINC 0.001
TYPE 2 156.235 0 670.222 XINC 0.001
TYPE 2 157.643 0 711.702 XINC 0.001
TYPE 2 157.846 0 717.699 XINC 0.001
TYPE 3 142.033 0 664.397 XINC 0.001
TYPE 3 142.236 0 670.396 XINC 0.001
TYPE 3 143.644 0 711.889 XINC 0.001
TYPE 3 143.848 0 717.887 XINC 0.001
LOAD GENERATION 1
TYPE 1 173.025 0 663.744 XINC 0.001
TYPE 1 173.247 0 669.74 XINC 0.001
TYPE 1 174.782 0 711.212 XINC 0.001
TYPE 1 175.004 0 717.207 XINC 0.001
TYPE 2 159.031 0 664.161 XINC 0.001
TYPE 2 159.253 0 670.158 XINC 0.001
TYPE 2 160.789 0 711.633 XINC 0.001
TYPE 2 161.011 0 717.63 XINC 0.001
TYPE 3 145.033 0 664.377 XINC 0.001
TYPE 3 145.255 0 670.375 XINC 0.001
TYPE 3 146.791 0 711.863 XINC 0.001
TYPE 3 147.013 0 717.861 XINC 0.001
LOAD GENERATION 1
TYPE 1 176.023 0 663.628 XINC 0.001
TYPE 1 176.263 0 669.624 XINC 0.001
TYPE 1 177.926 0 711.09 XINC 0.001
TYPE 1 178.167 0 717.085 XINC 0.001
TYPE 2 162.03 0 664.089 XINC 0.001
TYPE 2 162.271 0 670.085 XINC 0.001
TYPE 2 163.934 0 711.555 XINC 0.001
TYPE 2 164.175 0 717.551 XINC 0.001
TYPE 3 148.033 0 664.348 XINC 0.001
TYPE 3 148.273 0 670.345 XINC 0.001
TYPE 3 149.937 0 711.828 XINC 0.001
TYPE 3 150.177 0 717.826 XINC 0.001
LOAD GENERATION 1
TYPE 1 179.02 0 663.504 XINC 0.001
TYPE 1 179.279 0 669.498 XINC 0.001
TYPE 1 181.07 0 710.959 XINC 0.001
TYPE 1 181.329 0 716.954 XINC 0.001
TYPE 2 165.029 0 664.007 XINC 0.001
TYPE 2 165.288 0 670.002 XINC 0.001
TYPE 2 167.079 0 711.468 XINC 0.001
TYPE 2 167.338 0 717.462 XINC 0.001

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TYPE 3 151.033 0 664.309 XINC 0.001
TYPE 3 151.292 0 670.306 XINC 0.001
TYPE 3 153.083 0 711.784 XINC 0.001
TYPE 3 153.342 0 717.78 XINC 0.001
LOAD GENERATION 1
TYPE 1 182.017 0 663.369 XINC 0.001
TYPE 1 182.294 0 669.363 XINC 0.001
TYPE 1 184.213 0 710.819 XINC 0.001
TYPE 1 184.491 0 716.812 XINC 0.001
TYPE 2 168.028 0 663.916 XINC 0.001
TYPE 2 168.305 0 669.91 XINC 0.001
TYPE 2 170.224 0 711.37 XINC 0.001
TYPE 2 170.502 0 717.364 XINC 0.001
TYPE 3 154.032 0 664.261 XINC 0.001
TYPE 3 154.31 0 670.257 XINC 0.001
TYPE 3 156.229 0 711.729 XINC 0.001
TYPE 3 156.507 0 717.725 XINC 0.001
LOAD GENERATION 1
TYPE 1 185.014 0 663.226 XINC 0.001
TYPE 1 185.309 0 669.219 XINC 0.001
TYPE 1 187.356 0 710.668 XINC 0.001
TYPE 1 187.652 0 716.661 XINC 0.001
TYPE 2 171.026 0 663.816 XINC 0.001
TYPE 2 171.322 0 669.809 XINC 0.001
TYPE 2 173.369 0 711.263 XINC 0.001
TYPE 2 173.665 0 717.256 XINC 0.001
TYPE 3 157.032 0 664.204 XINC 0.001
TYPE 3 157.328 0 670.2 XINC 0.001
TYPE 3 159.375 0 711.665 XINC 0.001
TYPE 3 159.671 0 717.66 XINC 0.001
LOAD GENERATION 1
TYPE 1 188.01 0 663.074 XINC 0.001
TYPE 1 188.324 0 669.065 XINC 0.001
TYPE 1 190.499 0 710.508 XINC 0.001
TYPE 1 190.813 0 716.5 XINC 0.001
TYPE 2 174.024 0 663.706 XINC 0.001
TYPE 2 174.339 0 669.699 XINC 0.001
TYPE 2 176.513 0 711.146 XINC 0.001
TYPE 2 176.828 0 717.138 XINC 0.001
TYPE 3 160.031 0 664.138 XINC 0.001
TYPE 3 160.345 0 670.132 XINC 0.001
TYPE 3 162.52 0 711.592 XINC 0.001
TYPE 3 162.835 0 717.586 XINC 0.001
LOAD GENERATION 1
TYPE 1 191.005 0 662.912 XINC 0.001
TYPE 1 191.338 0 668.902 XINC 0.001
TYPE 1 193.64 0 710.339 XINC 0.001
TYPE 1 193.973 0 716.329 XINC 0.001
TYPE 2 177.022 0 663.588 XINC 0.001
TYPE 2 177.355 0 669.579 XINC 0.001
TYPE 2 179.657 0 711.019 XINC 0.001
TYPE 2 179.99 0 717.011 XINC 0.001
TYPE 3 163.03 0 664.063 XINC 0.001
TYPE 3 163.363 0 670.056 XINC 0.001
TYPE 3 165.666 0 711.508 XINC 0.001
TYPE 3 165.999 0 717.501 XINC 0.001
LOAD GENERATION 1
TYPE 1 194 0 662.741 XINC 0.001
TYPE 1 194.352 0 668.73 XINC 0.001
TYPE 1 196.782 0 710.159 XINC 0.001
TYPE 1 197.133 0 716.149 XINC 0.001
TYPE 2 180.019 0 663.46 XINC 0.001
TYPE 2 180.37 0 669.45 XINC 0.001
TYPE 2 182.801 0 710.883 XINC 0.001
TYPE 2 183.152 0 716.873 XINC 0.001
TYPE 3 166.029 0 663.978 XINC 0.001
TYPE 3 166.38 0 669.97 XINC 0.001
TYPE 3 168.811 0 711.415 XINC 0.001
TYPE 3 169.162 0 717.407 XINC 0.001
LOAD GENERATION 1
TYPE 1 196.995 0 662.56 XINC 0.001
TYPE 1 197.365 0 668.549 XINC 0.001
TYPE 1 199.923 0 709.97 XINC 0.001
TYPE 1 200.292 0 715.959 XINC 0.001
TYPE 2 183.016 0 663.323 XINC 0.001
TYPE 2 183.386 0 669.312 XINC 0.001
TYPE 2 185.944 0 710.737 XINC 0.001
TYPE 2 186.314 0 716.726 XINC 0.001
TYPE 3 169.027 0 663.884 XINC 0.001

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TYPE 3 169.397 0 669.875 XINC 0.001
TYPE 3 171.956 0 711.312 XINC 0.001
TYPE 3 172.326 0 717.303 XINC 0.001
LOAD GENERATION 1
TYPE 1 199.989 0 662.371 XINC 0.001
TYPE 1 200.377 0 668.358 XINC 0.001
TYPE 1 203.063 0 709.771 XINC 0.001
TYPE 1 203.451 0 715.759 XINC 0.001
TYPE 2 186.012 0 663.176 XINC 0.001
TYPE 2 186.401 0 669.164 XINC 0.001
TYPE 2 189.086 0 710.581 XINC 0.001
TYPE 2 189.475 0 716.569 XINC 0.001
TYPE 3 172.025 0 663.78 XINC 0.001
TYPE 3 172.414 0 669.77 XINC 0.001
TYPE 3 175.1 0 711.2 XINC 0.001
TYPE 3 175.489 0 717.189 XINC 0.001
LOAD GENERATION 1
TYPE 1 202.982 0 662.172 XINC 0.001
TYPE 1 203.389 0 668.158 XINC 0.001
TYPE 1 206.202 0 709.563 XINC 0.001
TYPE 1 206.609 0 715.549 XINC 0.001
TYPE 2 189.008 0 663.021 XINC 0.001
TYPE 2 189.415 0 669.007 XINC 0.001
TYPE 2 192.228 0 710.416 XINC 0.001
TYPE 2 192.635 0 716.403 XINC 0.001
TYPE 3 175.023 0 663.668 XINC 0.001
TYPE 3 175.43 0 669.657 XINC 0.001
TYPE 3 178.244 0 711.077 XINC 0.001
TYPE 3 178.651 0 717.066 XINC 0.001
LOAD GENERATION 1
TYPE 1 205.975 0 661.964 XINC 0.001
TYPE 1 206.4 0 667.949 XINC 0.001
TYPE 1 209.341 0 709.345 XINC 0.001
TYPE 1 209.766 0 715.33 XINC 0.001
TYPE 2 192.004 0 662.856 XINC 0.001
TYPE 2 192.429 0 668.841 XINC 0.001
TYPE 2 195.37 0 710.241 XINC 0.001
TYPE 2 195.795 0 716.226 XINC 0.001
TYPE 3 178.021 0 663.546 XINC 0.001
TYPE 3 178.446 0 669.534 XINC 0.001
TYPE 3 181.388 0 710.945 XINC 0.001
TYPE 3 181.813 0 716.933 XINC 0.001
LOAD GENERATION 1
TYPE 1 208.967 0 661.747 XINC 0.001
TYPE 1 209.411 0 667.73 XINC 0.001
TYPE 1 212.479 0 709.117 XINC 0.001
TYPE 1 212.923 0 715.1 XINC 0.001
TYPE 2 194.999 0 662.682 XINC 0.001
TYPE 2 195.442 0 668.666 XINC 0.001
TYPE 2 198.511 0 710.056 XINC 0.001
TYPE 2 198.955 0 716.04 XINC 0.001
TYPE 3 181.018 0 663.415 XINC 0.001
TYPE 3 181.462 0 669.401 XINC 0.001
TYPE 3 184.531 0 710.804 XINC 0.001
TYPE 3 184.975 0 716.79 XINC 0.001
LOAD GENERATION 1
TYPE 1 211.959 0 661.52 XINC 0.001
TYPE 1 212.421 0 667.503 XINC 0.001
TYPE 1 215.617 0 708.879 XINC 0.001
TYPE 1 216.079 0 714.862 XINC 0.001
TYPE 2 197.993 0 662.498 XINC 0.001
TYPE 2 198.455 0 668.481 XINC 0.001
TYPE 2 201.652 0 709.862 XINC 0.001
TYPE 2 202.114 0 715.845 XINC 0.001
TYPE 3 184.015 0 663.275 XINC 0.001
TYPE 3 184.477 0 669.26 XINC 0.001
TYPE 3 187.674 0 710.653 XINC 0.001
TYPE 3 188.136 0 716.637 XINC 0.001
LOAD GENERATION 1
TYPE 1 214.949 0 661.285 XINC 0.001
TYPE 1 215.43 0 667.266 XINC 0.001
TYPE 1 218.754 0 708.632 XINC 0.001
TYPE 1 219.234 0 714.613 XINC 0.001
TYPE 2 200.987 0 662.306 XINC 0.001
TYPE 2 201.467 0 668.287 XINC 0.001
TYPE 2 204.791 0 709.658 XINC 0.001
TYPE 2 205.272 0 715.639 XINC 0.001
TYPE 3 187.011 0 663.125 XINC 0.001
TYPE 3 187.492 0 669.109 XINC 0.001

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TYPE 3 190.816 0 710.492 XINC 0.001
TYPE 3 191.297 0 716.474 XINC 0.001
LOAD GENERATION 1
TYPE 1 217.939 0 661.04 XINC 0.001
TYPE 1 218.438 0 667.019 XINC 0.001
TYPE 1 221.89 0 708.375 XINC 0.001
TYPE 1 222.389 0 714.355 XINC 0.001
TYPE 2 203.98 0 662.104 XINC 0.001
TYPE 2 204.479 0 668.084 XINC 0.001
TYPE 2 207.931 0 709.444 XINC 0.001
TYPE 2 208.43 0 715.424 XINC 0.001
TYPE 3 190.007 0 662.967 XINC 0.001
TYPE 3 190.506 0 668.948 XINC 0.001
TYPE 3 193.958 0 710.321 XINC 0.001
TYPE 3 194.457 0 716.302 XINC 0.001
LOAD GENERATION 1
TYPE 1 220.929 0 660.786 XINC 0.001
TYPE 1 221.446 0 666.764 XINC 0.001
TYPE 1 225.025 0 708.109 XINC 0.001
TYPE 1 225.542 0 714.087 XINC 0.001
TYPE 2 206.973 0 661.893 XINC 0.001
TYPE 2 207.49 0 667.871 XINC 0.001
TYPE 2 211.069 0 709.22 XINC 0.001
TYPE 2 211.587 0 715.199 XINC 0.001
TYPE 3 193.002 0 662.799 XINC 0.001
TYPE 3 193.52 0 668.779 XINC 0.001
TYPE 3 197.1 0 710.14 XINC 0.001
TYPE 3 197.617 0 716.12 XINC 0.001
LOAD GENERATION 1
TYPE 1 223.917 0 660.523 XINC 0.001
TYPE 1 224.453 0 666.499 XINC 0.001
TYPE 1 228.159 0 707.833 XINC 0.001
TYPE 1 228.695 0 713.809 XINC 0.001
TYPE 2 209.965 0 661.672 XINC 0.001
TYPE 2 210.5 0 667.649 XINC 0.001
TYPE 2 214.207 0 708.987 XINC 0.001
TYPE 2 214.743 0 714.964 XINC 0.001
TYPE 3 195.997 0 662.622 XINC 0.001
TYPE 3 196.533 0 668.6 XINC 0.001
TYPE 3 200.24 0 709.95 XINC 0.001
TYPE 3 200.776 0 715.929 XINC 0.001
LOAD GENERATION 1
TYPE 1 226.905 0 660.25 XINC 0.001
TYPE 1 227.459 0 666.224 XINC 0.001
TYPE 1 231.293 0 707.547 XINC 0.001
TYPE 1 231.847 0 713.521 XINC 0.001
TYPE 2 212.956 0 661.443 XINC 0.001
TYPE 2 213.51 0 667.418 XINC 0.001
TYPE 2 217.344 0 708.744 XINC 0.001
TYPE 2 217.898 0 714.719 XINC 0.001
TYPE 3 198.991 0 662.435 XINC 0.001
TYPE 3 199.545 0 668.412 XINC 0.001
TYPE 3 203.38 0 709.751 XINC 0.001
TYPE 3 203.935 0 715.727 XINC 0.001
LOAD GENERATION 1
TYPE 1 229.891 0 659.968 XINC 0.001
TYPE 1 230.464 0 665.941 XINC 0.001
TYPE 1 234.425 0 707.251 XINC 0.001
TYPE 1 234.998 0 713.224 XINC 0.001
TYPE 2 215.946 0 661.204 XINC 0.001
TYPE 2 216.519 0 667.177 XINC 0.001
TYPE 2 220.48 0 708.492 XINC 0.001
TYPE 2 221.053 0 714.465 XINC 0.001
TYPE 3 201.985 0 662.239 XINC 0.001
TYPE 3 202.558 0 668.214 XINC 0.001
TYPE 3 206.52 0 709.541 XINC 0.001
TYPE 3 207.093 0 715.516 XINC 0.001
LOAD GENERATION 1
TYPE 1 232.877 0 659.677 XINC 0.001
TYPE 1 233.468 0 665.648 XINC 0.001
TYPE 1 237.557 0 706.946 XINC 0.001
TYPE 1 238.148 0 712.917 XINC 0.001
TYPE 2 218.936 0 660.956 XINC 0.001
TYPE 2 219.527 0 666.928 XINC 0.001
TYPE 2 223.616 0 708.23 XINC 0.001
TYPE 2 224.207 0 714.201 XINC 0.001
TYPE 3 204.978 0 662.035 XINC 0.001
TYPE 3 205.569 0 668.008 XINC 0.001
TYPE 3 209.659 0 709.322 XINC 0.001

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TYPE 3 210.25 0 715.295 XINC 0.001
LOAD GENERATION 1
TYPE 1 235.862 0 659.377 XINC 0.001
TYPE 1 236.472 0 665.346 XINC 0.001
TYPE 1 240.688 0 706.631 XINC 0.001
TYPE 1 241.297 0 712.6 XINC 0.001
TYPE 2 221.925 0 660.699 XINC 0.001
TYPE 2 222.534 0 666.669 XINC 0.001
TYPE 2 226.751 0 707.958 XINC 0.001
TYPE 2 227.36 0 713.928 XINC 0.001
TYPE 3 207.97 0 661.82 XINC 0.001
TYPE 3 208.58 0 667.792 XINC 0.001
TYPE 3 212.797 0 709.093 XINC 0.001
TYPE 3 213.407 0 715.065 XINC 0.001
LOAD GENERATION 1
TYPE 1 238.846 0 659.068 XINC 0.001
TYPE 1 239.474 0 665.035 XINC 0.001
TYPE 1 243.817 0 706.307 XINC 0.001
TYPE 1 244.445 0 712.274 XINC 0.001
TYPE 2 224.913 0 660.433 XINC 0.001
TYPE 2 225.541 0 666.4 XINC 0.001
TYPE 2 229.885 0 707.677 XINC 0.001
TYPE 2 230.513 0 713.644 XINC 0.001
TYPE 2 210.962 0 661.597 XINC 0.001
TYPE 3 211.59 0 667.566 XINC 0.001
TYPE 3 215.934 0 708.855 XINC 0.001
TYPE 3 216.562 0 714.824 XINC 0.001
LOAD GENERATION 1
TYPE 1 241.829 0 658.749 XINC 0.001
TYPE 1 242.476 0 664.714 XINC 0.001
TYPE 1 246.946 0 705.973 XINC 0.001
TYPE 1 247.592 0 711.938 XINC 0.001
TYPE 2 227.9 0 660.157 XINC 0.001
TYPE 2 228.547 0 666.123 XINC 0.001
TYPE 2 233.018 0 707.385 XINC 0.001
TYPE 2 233.664 0 713.351 XINC 0.001
TYPE 3 213.953 0 661.364 XINC 0.001
TYPE 3 214.599 0 667.332 XINC 0.001
TYPE 3 219.071 0 708.607 XINC 0.001
TYPE 3 219.718 0 714.574 XINC 0.001
LOAD GENERATION 1
TYPE 1 244.811 0 658.421 XINC 0.001
TYPE 1 245.476 0 664.385 XINC 0.001
TYPE 1 250.074 0 705.629 XINC 0.001
TYPE 1 250.738 0 711.592 XINC 0.001
TYPE 2 230.887 0 659.872 XINC 0.001
TYPE 2 231.552 0 665.836 XINC 0.001
TYPE 2 236.15 0 707.085 XINC 0.001
TYPE 2 236.814 0 713.048 XINC 0.001
TYPE 3 216.943 0 661.123 XINC 0.001
TYPE 3 217.608 0 667.088 XINC 0.001
TYPE 3 222.207 0 708.349 XINC 0.001
TYPE 3 222.872 0 714.314 XINC 0.001
LOAD GENERATION 1
TYPE 1 247.792 0 658.084 XINC 0.001
TYPE 1 248.475 0 664.045 XINC 0.001
TYPE 1 253.2 0 705.276 XINC 0.001
TYPE 1 253.883 0 711.237 XINC 0.001
TYPE 2 233.872 0 659.578 XINC 0.001
TYPE 2 234.556 0 665.54 XINC 0.001
TYPE 2 239.281 0 706.774 XINC 0.001
TYPE 2 239.964 0 712.736 XINC 0.001
TYPE 3 219.932 0 660.872 XINC 0.001
TYPE 3 220.616 0 666.835 XINC 0.001
TYPE 3 225.342 0 708.081 XINC 0.001
TYPE 3 226.025 0 714.045 XINC 0.001
LOAD GENERATION 1
TYPE 1 250.772 0 657.738 XINC 0.001
TYPE 1 251.474 0 663.697 XINC 0.001
TYPE 1 256.326 0 704.913 XINC 0.001
TYPE 1 257.027 0 710.871 XINC 0.001
TYPE 2 236.857 0 659.275 XINC 0.001
TYPE 2 237.559 0 665.234 XINC 0.001
TYPE 2 242.411 0 706.454 XINC 0.001
TYPE 2 243.112 0 712.413 XINC 0.001
TYPE 3 222.921 0 660.611 XINC 0.001
TYPE 3 223.623 0 666.573 XINC 0.001
TYPE 3 228.476 0 707.804 XINC 0.001
TYPE 3 229.178 0 713.765 XINC 0.001

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LOAD GENERATION 1
TYPE 1 253.751 0 657.383 XINC 0.001
TYPE 1 254.471 0 663.34 XINC 0.001
TYPE 1 259.45 0 704.54 XINC 0.001
TYPE 1 260.17 0 710.497 XINC 0.001
TYPE 2 239.841 0 658.963 XINC 0.001
TYPE 2 240.561 0 664.92 XINC 0.001
TYPE 2 245.54 0 706.124 XINC 0.001
TYPE 2 246.26 0 712.081 XINC 0.001
TYPE 3 225.909 0 660.342 XINC 0.001
TYPE 3 226.629 0 666.301 XINC 0.001
TYPE 3 231.61 0 707.517 XINC 0.001
TYPE 3 232.33 0 713.476 XINC 0.001
LOAD GENERATION 1
TYPE 1 256.729 0 657.018 XINC 0.001
TYPE 1 257.467 0 662.973 XINC 0.001
TYPE 1 262.573 0 704.158 XINC 0.001
TYPE 1 263.311 0 710.112 XINC 0.001
TYPE 2 242.823 0 658.641 XINC 0.001
TYPE 2 243.562 0 664.596 XINC 0.001
TYPE 2 248.668 0 705.785 XINC 0.001
TYPE 2 249.406 0 711.74 XINC 0.001
TYPE 3 228.896 0 660.063 XINC 0.001
TYPE 3 229.634 0 666.02 XINC 0.001
TYPE 3 234.742 0 707.221 XINC 0.001
TYPE 3 235.481 0 713.178 XINC 0.001
LOAD GENERATION 1
TYPE 1 259.706 0 656.645 XINC 0.001
TYPE 1 260.462 0 662.597 XINC 0.001
TYPE 1 265.695 0 703.766 XINC 0.001
TYPE 1 266.452 0 709.718 XINC 0.001
TYPE 2 245.805 0 658.31 XINC 0.001
TYPE 2 246.562 0 664.263 XINC 0.001
TYPE 2 251.795 0 705.436 XINC 0.001
TYPE 2 252.552 0 711.388 XINC 0.001
TYPE 3 231.882 0 659.775 XINC 0.001
TYPE 3 232.639 0 665.73 XINC 0.001
TYPE 3 237.874 0 706.915 XINC 0.001
TYPE 3 238.63 0 712.869 XINC 0.001
LOAD GENERATION 1
TYPE 1 262.681 0 656.262 XINC 0.001
TYPE 1 263.456 0 662.212 XINC 0.001
TYPE 1 268.816 0 703.364 XINC 0.001
TYPE 1 269.591 0 709.314 XINC 0.001
TYPE 2 248.786 0 657.97 XINC 0.001
TYPE 2 249.561 0 663.92 XINC 0.001
TYPE 2 254.921 0 705.077 XINC 0.001
TYPE 2 255.696 0 711.027 XINC 0.001
TYPE 3 234.867 0 659.478 XINC 0.001
TYPE 3 235.643 0 665.43 XINC 0.001
TYPE 3 241.004 0 706.599 XINC 0.001
TYPE 3 241.779 0 712.551 XINC 0.001
LOAD GENERATION 1
TYPE 1 265.655 0 655.87 XINC 0.001
TYPE 1 266.449 0 661.817 XINC 0.001
TYPE 1 271.935 0 702.953 XINC 0.001
TYPE 1 272.729 0 708.9 XINC 0.001
TYPE 2 251.765 0 657.621 XINC 0.001
TYPE 2 252.559 0 663.569 XINC 0.001
TYPE 2 258.046 0 704.709 XINC 0.001
TYPE 2 258.839 0 710.656 XINC 0.001
TYPE 3 237.852 0 659.172 XINC 0.001
TYPE 3 238.645 0 665.122 XINC 0.001
TYPE 3 244.134 0 706.274 XINC 0.001
TYPE 3 244.927 0 712.223 XINC 0.001
LOAD GENERATION 1
TYPE 1 268.628 0 655.469 XINC 0.001
TYPE 1 269.44 0 661.413 XINC 0.001
TYPE 1 275.054 0 702.532 XINC 0.001
TYPE 1 275.865 0 708.477 XINC 0.001
TYPE 2 254.744 0 657.263 XINC 0.001
TYPE 2 255.556 0 663.208 XINC 0.001
TYPE 2 261.17 0 704.331 XINC 0.001
TYPE 2 261.981 0 710.276 XINC 0.001
TYPE 3 240.835 0 658.856 XINC 0.001
TYPE 3 241.647 0 664.804 XINC 0.001
TYPE 3 247.262 0 705.938 XINC 0.001
TYPE 3 248.074 0 711.886 XINC 0.001
LOAD GENERATION 1

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TYPE 1 271.6 0 655.058 XINC 0.001
TYPE 1 272.43 0 661.001 XINC 0.001
TYPE 1 278.17 0 702.102 XINC 0.001
TYPE 1 279 0 708.044 XINC 0.001
TYPE 2 257.721 0 656.895 XINC 0.001
TYPE 2 258.551 0 662.838 XINC 0.001
TYPE 2 264.292 0 703.943 XINC 0.001
TYPE 2 265.122 0 709.886 XINC 0.001
TYPE 3 243.817 0 658.532 XINC 0.001
TYPE 3 244.648 0 664.476 XINC 0.001
TYPE 3 250.39 0 705.594 XINC 0.001
TYPE 3 251.22 0 711.538 XINC 0.001
LOAD GENERATION 1
TYPE 1 274.571 0 654.639 XINC 0.001
TYPE 1 275.419 0 660.578 XINC 0.001
TYPE 1 281.286 0 701.662 XINC 0.001
TYPE 1 282.134 0 707.601 XINC 0.001
TYPE 2 260.698 0 656.518 XINC 0.001
TYPE 2 261.546 0 662.459 XINC 0.001
TYPE 2 267.413 0 703.546 XINC 0.001
TYPE 2 268.262 0 709.486 XINC 0.001
TYPE 3 246.799 0 658.198 XINC 0.001
TYPE 3 247.647 0 664.14 XINC 0.001
TYPE 3 253.516 0 705.239 XINC 0.001
TYPE 3 254.365 0 711.181 XINC 0.001
LOAD GENERATION 1
TYPE 1 277.54 0 654.21 XINC 0.001
TYPE 1 278.406 0 660.147 XINC 0.001
TYPE 1 284.4 0 701.212 XINC 0.001
TYPE 1 285.267 0 707.149 XINC 0.001
TYPE 2 263.673 0 656.132 XINC 0.001
TYPE 2 264.539 0 662.07 XINC 0.001
TYPE 2 270.534 0 703.139 XINC 0.001
TYPE 2 271.4 0 709.076 XINC 0.001
TYPE 3 249.779 0 657.855 XINC 0.001
TYPE 3 250.646 0 663.794 XINC 0.001
TYPE 3 256.642 0 704.875 XINC 0.001
TYPE 3 257.509 0 710.815 XINC 0.001
LOAD GENERATION 1
TYPE 1 280.508 0 653.772 XINC 0.001
TYPE 1 281.393 0 659.707 XINC 0.001
TYPE 1 287.513 0 700.753 XINC 0.001
TYPE 1 288.398 0 706.687 XINC 0.001
TYPE 2 266.646 0 655.737 XINC 0.001
TYPE 2 267.531 0 661.672 XINC 0.001
TYPE 2 273.652 0 702.722 XINC 0.001
TYPE 2 274.537 0 708.657 XINC 0.001
TYPE 3 252.758 0 657.503 XINC 0.001
TYPE 3 253.644 0 663.439 XINC 0.001
TYPE 3 259.766 0 704.502 XINC 0.001
TYPE 3 260.651 0 710.438 XINC 0.001
LOAD GENERATION 1
TYPE 1 283.474 0 653.325 XINC 0.001
TYPE 1 284.377 0 659.257 XINC 0.001
TYPE 1 290.624 0 700.284 XINC 0.001
TYPE 1 291.527 0 706.216 XINC 0.001
TYPE 2 269.619 0 655.333 XINC 0.001
TYPE 2 270.522 0 661.265 XINC 0.001
TYPE 2 276.77 0 702.296 XINC 0.001
TYPE 2 277.673 0 708.229 XINC 0.001
TYPE 3 255.736 0 657.141 XINC 0.001
TYPE 3 256.64 0 663.075 XINC 0.001
TYPE 3 262.889 0 704.118 XINC 0.001
TYPE 3 263.792 0 710.052 XINC 0.001
LOAD GENERATION 1
TYPE 1 286.439 0 652.869 XINC 0.001
TYPE 1 287.361 0 658.798 XINC 0.001
TYPE 1 293.734 0 699.806 XINC 0.001
TYPE 1 294.656 0 705.734 XINC 0.001
TYPE 2 272.59 0 654.92 XINC 0.001
TYPE 2 273.512 0 660.849 XINC 0.001
TYPE 2 279.886 0 701.861 XINC 0.001
TYPE 2 280.807 0 707.79 XINC 0.001
TYPE 3 258.714 0 656.77 XINC 0.001
TYPE 3 259.635 0 662.702 XINC 0.001
TYPE 3 266.011 0 703.726 XINC 0.001
TYPE 3 266.933 0 709.657 XINC 0.001
LOAD GENERATION 1
TYPE 1 289.403 0 652.404 XINC 0.001

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TYPE 1 290.343 0 658.33 XINC 0.001
TYPE 1 296.843 0 699.318 XINC 0.001
TYPE 1 297.782 0 705.243 XINC 0.001
TYPE 2 275.561 0 654.497 XINC 0.001
TYPE 2 276.5 0 660.423 XINC 0.001
TYPE 2 283.001 0 701.415 XINC 0.001
TYPE 2 283.941 0 707.342 XINC 0.001
TYPE 3 261.689 0 656.391 XINC 0.001
TYPE 3 262.629 0 662.319 XINC 0.001
TYPE 3 269.131 0 703.323 XINC 0.001
TYPE 3 270.071 0 709.251 XINC 0.001
LOAD GENERATION 1
TYPE 1 292.365 0 651.929 XINC 0.001
TYPE 1 293.323 0 657.852 XINC 0.001
TYPE 1 299.949 0 698.82 XINC 0.001
TYPE 1 300.907 0 704.743 XINC 0.001
TYPE 2 278.529 0 654.065 XINC 0.001
TYPE 2 279.487 0 659.989 XINC 0.001
TYPE 2 286.114 0 700.96 XINC 0.001
TYPE 2 287.072 0 706.884 XINC 0.001
TYPE 3 264.664 0 656.002 XINC 0.001
TYPE 3 265.622 0 661.927 XINC 0.001
TYPE 3 272.251 0 702.911 XINC 0.001
TYPE 3 273.209 0 708.836 XINC 0.001
LOAD GENERATION 1
TYPE 1 295.326 0 651.446 XINC 0.001
TYPE 1 296.302 0 657.366 XINC 0.001
TYPE 1 303.055 0 698.313 XINC 0.001
TYPE 1 304.031 0 704.233 XINC 0.001
TYPE 2 281.497 0 653.624 XINC 0.001
TYPE 2 282.473 0 659.545 XINC 0.001
TYPE 2 289.226 0 700.496 XINC 0.001
TYPE 2 290.202 0 706.416 XINC 0.001
TYPE 3 267.637 0 655.603 XINC 0.001
TYPE 3 268.614 0 661.526 XINC 0.001
TYPE 3 275.369 0 702.489 XINC 0.001
TYPE 3 276.345 0 708.411 XINC 0.001
LOAD GENERATION 1
TYPE 1 298.285 0 650.953 XINC 0.001
TYPE 1 299.28 0 656.87 XINC 0.001
TYPE 1 306.159 0 697.796 XINC 0.001
TYPE 1 307.153 0 703.713 XINC 0.001
TYPE 2 284.463 0 653.174 XINC 0.001
TYPE 2 285.457 0 659.092 XINC 0.001
TYPE 2 292.337 0 700.022 XINC 0.001
TYPE 2 293.331 0 705.939 XINC 0.001
TYPE 3 270.61 0 655.196 XINC 0.001
TYPE 3 271.605 0 661.116 XINC 0.001
TYPE 3 278.486 0 702.058 XINC 0.001
TYPE 3 279.48 0 707.977 XINC 0.001
LOAD GENERATION 1
TYPE 1 301.243 0 650.451 XINC 0.001
TYPE 1 302.256 0 656.365 XINC 0.001
TYPE 1 309.261 0 697.27 XINC 0.001
TYPE 1 310.273 0 703.184 XINC 0.001
TYPE 2 287.427 0 652.715 XINC 0.001
TYPE 2 288.44 0 658.629 XINC 0.001
TYPE 2 295.446 0 699.538 XINC 0.001
TYPE 2 296.459 0 705.452 XINC 0.001
TYPE 3 273.581 0 654.78 XINC 0.001
TYPE 3 274.594 0 660.696 XINC 0.001
TYPE 3 281.601 0 701.617 XINC 0.001
TYPE 3 282.614 0 707.533 XINC 0.001
LOAD GENERATION 1
TYPE 1 304.199 0 649.94 XINC 0.001
TYPE 1 305.23 0 655.851 XINC 0.001
TYPE 1 312.361 0 696.734 XINC 0.001
TYPE 1 313.392 0 702.645 XINC 0.001
TYPE 2 290.391 0 652.247 XINC 0.001
TYPE 2 291.422 0 658.158 XINC 0.001
TYPE 2 298.553 0 699.045 XINC 0.001
TYPE 2 299.584 0 704.956 XINC 0.001
TYPE 3 276.55 0 654.354 XINC 0.001
TYPE 3 277.582 0 660.267 XINC 0.001
TYPE 3 284.715 0 701.166 XINC 0.001
TYPE 3 285.746 0 707.079 XINC 0.001
LOAD GENERATION 1
TYPE 1 307.154 0 649.42 XINC 0.001
TYPE 1 308.203 0 655.328 XINC 0.001

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TYPE 1 315.46 0 696.188 XINC 0.001
TYPE 1 316.509 0 702.096 XINC 0.001
TYPE 2 293.352 0 651.769 XINC 0.001
TYPE 2 294.402 0 657.677 XINC 0.001
TYPE 2 301.659 0 698.542 XINC 0.001
TYPE 2 302.709 0 704.45 XINC 0.001
TYPE 3 279.519 0 653.919 XINC 0.001
TYPE 3 280.568 0 659.829 XINC 0.001
TYPE 3 287.828 0 700.706 XINC 0.001
TYPE 3 288.877 0 706.616 XINC 0.001
LOAD GENERATION 1
TYPE 1 310.107 0 648.891 XINC 0.001
TYPE 1 311.174 0 654.795 XINC 0.001
TYPE 1 318.557 0 695.633 XINC 0.001
TYPE 1 319.625 0 701.538 XINC 0.001
TYPE 2 296.313 0 651.283 XINC 0.001
TYPE 2 297.38 0 657.187 XINC 0.001
TYPE 2 304.764 0 698.029 XINC 0.001
TYPE 2 305.831 0 703.934 XINC 0.001
TYPE 3 282.486 0 653.475 XINC 0.001
TYPE 3 283.553 0 659.382 XINC 0.001
TYPE 3 290.939 0 700.236 XINC 0.001
TYPE 3 292.007 0 706.142 XINC 0.001
LOAD GENERATION 1
TYPE 1 313.058 0 648.353 XINC 0.001
TYPE 1 314.144 0 654.254 XINC 0.001
TYPE 1 321.653 0 695.069 XINC 0.001
TYPE 1 322.738 0 700.97 XINC 0.001
TYPE 2 299.271 0 650.787 XINC 0.001
TYPE 2 300.357 0 656.688 XINC 0.001
TYPE 2 307.867 0 697.507 XINC 0.001
TYPE 2 308.952 0 703.409 XINC 0.001
TYPE 3 285.451 0 653.022 XINC 0.001
TYPE 3 286.537 0 658.926 XINC 0.001
TYPE 3 294.049 0 699.757 XINC 0.001
TYPE 3 295.135 0 705.66 XINC 0.001
LOAD GENERATION 1
TYPE 1 316.008 0 647.806 XINC 0.001
TYPE 1 317.112 0 653.703 XINC 0.001
TYPE 1 324.746 0 694.495 XINC 0.001
TYPE 1 325.85 0 700.392 XINC 0.001
TYPE 2 302.229 0 650.282 XINC 0.001
TYPE 2 303.333 0 656.18 XINC 0.001
TYPE 2 310.968 0 696.976 XINC 0.001
TYPE 2 312.072 0 702.874 XINC 0.001
TYPE 3 288.415 0 652.56 XINC 0.001
TYPE 3 289.52 0 658.46 XINC 0.001
TYPE 3 297.157 0 699.268 XINC 0.001
TYPE 3 298.261 0 705.167 XINC 0.001
LOAD GENERATION 1
TYPE 1 318.956 0 647.249 XINC 0.001
TYPE 1 320.078 0 653.143 XINC 0.001
TYPE 1 327.838 0 693.911 XINC 0.001
TYPE 1 328.96 0 699.805 XINC 0.001
TYPE 2 305.184 0 649.768 XINC 0.001
TYPE 2 306.306 0 655.663 XINC 0.001
TYPE 2 314.068 0 696.435 XINC 0.001
TYPE 2 315.19 0 702.329 XINC 0.001
TYPE 3 291.378 0 652.089 XINC 0.001
TYPE 3 292.5 0 657.985 XINC 0.001
TYPE 3 300.264 0 698.769 XINC 0.001
TYPE 3 301.386 0 704.665 XINC 0.001
LOAD GENERATION 1
TYPE 1 321.902 0 646.684 XINC 0.001
TYPE 1 323.042 0 652.574 XINC 0.001
TYPE 1 330.928 0 693.318 XINC 0.001
TYPE 1 332.068 0 699.209 XINC 0.001
TYPE 2 308.138 0 649.245 XINC 0.001
TYPE 2 309.279 0 655.136 XINC 0.001
TYPE 2 317.165 0 695.884 XINC 0.001
TYPE 2 318.306 0 701.775 XINC 0.001
TYPE 3 294.339 0 651.608 XINC 0.001
TYPE 3 295.48 0 657.501 XINC 0.001
TYPE 3 303.369 0 698.261 XINC 0.001
TYPE 3 304.509 0 704.154 XINC 0.001
LOAD GENERATION 1
TYPE 1 324.846 0 646.109 XINC 0.001
TYPE 1 326.005 0 651.996 XINC 0.001
TYPE 1 334.016 0 692.715 XINC 0.001

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TYPE 1 335.175 0 698.602 XINC 0.001
TYPE 2 311.091 0 648.713 XINC 0.001
TYPE 2 312.249 0 654.6 XINC 0.001
TYPE 2 320.262 0 695.324 XINC 0.001
TYPE 2 321.42 0 701.211 XINC 0.001
TYPE 3 297.299 0 651.118 XINC 0.001
TYPE 3 298.458 0 657.008 XINC 0.001
TYPE 3 306.472 0 697.743 XINC 0.001
TYPE 3 307.631 0 703.633 XINC 0.001
LOAD GENERATION 1
TYPE 1 327.789 0 645.525 XINC 0.001
TYPE 1 328.966 0 651.409 XINC 0.001
TYPE 1 337.103 0 692.103 XINC 0.001
TYPE 1 338.279 0 697.987 XINC 0.001
TYPE 2 314.042 0 648.171 XINC 0.001
TYPE 2 315.218 0 654.056 XINC 0.001
TYPE 2 323.356 0 694.754 XINC 0.001
TYPE 2 324.533 0 700.638 XINC 0.001
TYPE 3 300.257 0 650.62 XINC 0.001
TYPE 3 301.434 0 656.505 XINC 0.001
TYPE 3 309.574 0 697.216 XINC 0.001
TYPE 3 310.751 0 703.102 XINC 0.001
LOAD GENERATION 1
TYPE 1 330.73 0 644.932 XINC 0.001
TYPE 1 331.924 0 650.812 XINC 0.001
TYPE 1 340.187 0 691.481 XINC 0.001
TYPE 1 341.382 0 697.361 XINC 0.001
TYPE 2 316.991 0 647.621 XINC 0.001
TYPE 2 318.185 0 653.502 XINC 0.001
TYPE 2 326.449 0 694.175 XINC 0.001
TYPE 2 327.643 0 700.055 XINC 0.001
TYPE 3 303.214 0 650.112 XINC 0.001
TYPE 3 304.409 0 655.994 XINC 0.001
TYPE 3 312.675 0 696.679 XINC 0.001
TYPE 3 313.87 0 702.561 XINC 0.001
LOAD GENERATION 1
TYPE 1 333.669 0 644.331 XINC 0.001
TYPE 1 334.882 0 650.207 XINC 0.001
TYPE 1 343.27 0 690.85 XINC 0.001
TYPE 1 344.482 0 696.726 XINC 0.001
TYPE 2 319.938 0 647.062 XINC 0.001
TYPE 2 321.151 0 652.938 XINC 0.001
TYPE 2 329.54 0 693.586 XINC 0.001
TYPE 2 330.753 0 699.462 XINC 0.001
TYPE 3 306.169 0 649.595 XINC 0.001
TYPE 3 307.382 0 655.473 XINC 0.001
TYPE 3 315.773 0 696.133 XINC 0.001
TYPE 3 316.987 0 702.011 XINC 0.001
LOAD GENERATION 1
TYPE 1 336.606 0 643.72 XINC 0.001
TYPE 1 337.837 0 649.592 XINC 0.001
TYPE 1 346.35 0 690.209 XINC 0.001
TYPE 1 347.581 0 696.082 XINC 0.001
TYPE 2 322.884 0 646.493 XINC 0.001
TYPE 2 324.115 0 652.366 XINC 0.001
TYPE 2 332.629 0 692.987 XINC 0.001
TYPE 2 333.86 0 698.86 XINC 0.001
TYPE 3 309.123 0 649.068 XINC 0.001
TYPE 3 310.354 0 654.943 XINC 0.001
TYPE 3 318.87 0 695.577 XINC 0.001
TYPE 3 320.102 0 701.451 XINC 0.001
LOAD GENERATION 1
TYPE 1 339.541 0 643.1 XINC 0.001
TYPE 1 340.79 0 648.968 XINC 0.001
TYPE 1 349.429 0 689.559 XINC 0.001
TYPE 1 350.678 0 695.428 XINC 0.001
TYPE 2 325.827 0 645.915 XINC 0.001
TYPE 2 327.077 0 651.785 XINC 0.001
TYPE 2 335.716 0 692.379 XINC 0.001
TYPE 2 336.965 0 698.249 XINC 0.001
TYPE 3 312.075 0 648.533 XINC 0.001
TYPE 3 313.324 0 654.404 XINC 0.001
TYPE 3 321.966 0 695.011 XINC 0.001
TYPE 3 323.215 0 700.882 XINC 0.001
LOAD GENERATION 1
TYPE 1 342.475 0 642.471 XINC 0.001
TYPE 1 343.742 0 648.335 XINC 0.001
TYPE 1 352.505 0 688.9 XINC 0.001
TYPE 1 353.772 0 694.764 XINC 0.001

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TYPE 2 328.77 0 645.329 XINC 0.001
TYPE 2 330.037 0 651.194 XINC 0.001
TYPE 2 338.801 0 691.762 XINC 0.001
TYPE 2 340.068 0 697.627 XINC 0.001
TYPE 3 315.025 0 647.989 XINC 0.001
TYPE 3 316.292 0 653.856 XINC 0.001
TYPE 3 325.059 0 694.436 XINC 0.001
TYPE 3 326.327 0 700.303 XINC 0.001
LOAD GENERATION 1
TYPE 1 345.406 0 641.833 XINC 0.001
TYPE 1 346.691 0 647.693 XINC 0.001
TYPE 1 355.58 0 688.23 XINC 0.001
TYPE 1 356.865 0 694.091 XINC 0.001
TYPE 2 331.71 0 644.733 XINC 0.001
TYPE 2 332.995 0 650.594 XINC 0.001
TYPE 2 341.885 0 691.135 XINC 0.001
TYPE 2 343.17 0 696.996 XINC 0.001
TYPE 3 317.973 0 647.436 XINC 0.001
TYPE 3 319.259 0 653.299 XINC 0.001
TYPE 3 328.151 0 693.852 XINC 0.001
TYPE 3 329.436 0 699.715 XINC 0.001
LOAD GENERATION 1
TYPE 1 348.335 0 641.186 XINC 0.001
TYPE 1 349.639 0 647.042 XINC 0.001
TYPE 1 358.652 0 687.552 XINC 0.001
TYPE 1 359.955 0 693.408 XINC 0.001
TYPE 2 334.648 0 644.128 XINC 0.001
TYPE 2 335.951 0 649.985 XINC 0.001
TYPE 2 344.966 0 690.499 XINC 0.001
TYPE 2 346.269 0 696.356 XINC 0.001
TYPE 3 320.92 0 646.873 XINC 0.001
TYPE 3 322.224 0 652.732 XINC 0.001
TYPE 3 331.241 0 693.257 XINC 0.001
TYPE 3 332.544 0 699.116 XINC 0.001
LOAD GENERATION 1
TYPE 1 351.263 0 640.53 XINC 0.001
TYPE 1 352.584 0 646.382 XINC 0.001
TYPE 1 361.723 0 686.864 XINC 0.001
TYPE 1 363.044 0 692.716 XINC 0.001
TYPE 2 337.585 0 643.514 XINC 0.001
TYPE 2 338.906 0 649.367 XINC 0.001
TYPE 2 348.045 0 689.853 XINC 0.001
TYPE 2 349.367 0 695.706 XINC 0.001
TYPE 3 323.865 0 646.301 XINC 0.001
TYPE 3 325.187 0 652.157 XINC 0.001
TYPE 3 334.329 0 692.654 XINC 0.001
TYPE 3 335.65 0 698.509 XINC 0.001
LOAD GENERATION 1
TYPE 1 354.188 0 639.864 XINC 0.001
TYPE 1 355.527 0 645.713 XINC 0.001
TYPE 1 364.791 0 686.166 XINC 0.001
TYPE 1 366.13 0 692.015 XINC 0.001
TYPE 2 340.519 0 642.891 XINC 0.001
TYPE 2 341.859 0 648.74 XINC 0.001
TYPE 2 351.123 0 689.197 XINC 0.001
TYPE 2 352.462 0 695.046 XINC 0.001
TYPE 3 326.808 0 645.721 XINC 0.001
TYPE 3 328.148 0 651.572 XINC 0.001
TYPE 3 337.415 0 692.041 XINC 0.001
TYPE 3 338.755 0 697.891 XINC 0.001
LOAD GENERATION 1
TYPE 1 357.111 0 639.19 XINC 0.001
TYPE 1 358.469 0 645.035 XINC 0.001
TYPE 1 367.857 0 685.459 XINC 0.001
TYPE 1 369.214 0 691.303 XINC 0.001
TYPE 2 343.452 0 642.259 XINC 0.001
TYPE 2 344.809 0 648.104 XINC 0.001
TYPE 2 354.198 0 688.532 XINC 0.001
TYPE 2 355.556 0 694.377 XINC 0.001
TYPE 3 329.75 0 645.131 XINC 0.001
TYPE 3 331.108 0 650.978 XINC 0.001
TYPE 3 340.499 0 691.418 XINC 0.001
TYPE 3 341.857 0 697.265 XINC 0.001
LOAD GENERATION 1
TYPE 1 360.033 0 638.507 XINC 0.001
TYPE 1 361.408 0 644.347 XINC 0.001
TYPE 1 370.92 0 684.742 XINC 0.001
TYPE 1 372.296 0 690.583 XINC 0.001
TYPE 2 346.383 0 641.618 XINC 0.001

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TYPE 2 347.758 0 647.459 XINC 0.001
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TYPE 2 358.647 0 693.699 XINC 0.001
TYPE 3 332.689 0 644.532 XINC 0.001
TYPE 3 334.065 0 650.375 XINC 0.001
TYPE 3 343.581 0 690.786 XINC 0.001
TYPE 3 344.957 0 696.628 XINC 0.001
LOAD GENERATION 1
TYPE 1 362.952 0 637.815 XINC 0.001
TYPE 1 364.345 0 643.651 XINC 0.001
TYPE 1 373.982 0 684.016 XINC 0.001
TYPE 1 375.375 0 689.852 XINC 0.001
TYPE 2 349.311 0 640.968 XINC 0.001
TYPE 2 350.705 0 646.805 XINC 0.001
TYPE 2 360.343 0 687.174 XINC 0.001
TYPE 2 361.736 0 693.01 XINC 0.001
TYPE 3 335.627 0 643.924 XINC 0.001
TYPE 3 337.021 0 649.763 XINC 0.001
TYPE 3 346.662 0 690.144 XINC 0.001
TYPE 3 348.056 0 695.982 XINC 0.001
LOAD GENERATION 1
TYPE 1 365.868 0 637.114 XINC 0.001
TYPE 1 367.28 0 642.945 XINC 0.001
TYPE 1 377.041 0 683.281 XINC 0.001
TYPE 1 378.453 0 689.113 XINC 0.001
TYPE 2 352.238 0 640.309 XINC 0.001
TYPE 2 353.65 0 646.141 XINC 0.001
TYPE 2 363.412 0 686.481 XINC 0.001
TYPE 2 364.824 0 692.313 XINC 0.001
TYPE 3 338.563 0 643.307 XINC 0.001
TYPE 3 339.975 0 649.141 XINC 0.001
TYPE 3 349.74 0 689.493 XINC 0.001
TYPE 3 351.152 0 695.327 XINC 0.001
LOAD GENERATION 1
TYPE 1 368.783 0 636.404 XINC 0.001
TYPE 1 370.213 0 642.231 XINC 0.001
TYPE 1 380.098 0 682.536 XINC 0.001
TYPE 1 381.528 0 688.363 XINC 0.001
TYPE 2 355.163 0 639.641 XINC 0.001
TYPE 2 356.592 0 645.469 XINC 0.001
TYPE 2 366.479 0 685.778 XINC 0.001
TYPE 2 367.908 0 691.606 XINC 0.001
TYPE 3 341.497 0 642.681 XINC 0.001
TYPE 3 342.927 0 648.511 XINC 0.001
TYPE 3 352.816 0 688.832 XINC 0.001
TYPE 3 354.246 0 694.662 XINC 0.001
LOAD GENERATION 1
TYPE 1 371.696 0 635.684 XINC 0.001
TYPE 1 373.143 0 641.507 XINC 0.001
TYPE 1 383.153 0 681.782 XINC 0.001
TYPE 1 384.6 0 687.605 XINC 0.001
TYPE 2 358.085 0 638.964 XINC 0.001
TYPE 2 359.533 0 644.787 XINC 0.001
TYPE 2 369.544 0 685.066 XINC 0.001
TYPE 2 370.991 0 690.889 XINC 0.001
TYPE 3 344.429 0 642.046 XINC 0.001
TYPE 3 345.877 0 647.872 XINC 0.001
TYPE 3 355.891 0 688.162 XINC 0.001
TYPE 3 357.338 0 693.987 XINC 0.001
LOAD GENERATION 1
TYPE 1 374.606 0 634.956 XINC 0.001
TYPE 1 376.071 0 640.775 XINC 0.001
TYPE 1 386.206 0 681.018 XINC 0.001
TYPE 1 387.671 0 686.837 XINC 0.001
TYPE 2 361.006 0 638.277 XINC 0.001
TYPE 2 362.471 0 644.096 XINC 0.001
TYPE 2 372.606 0 684.344 XINC 0.001
TYPE 2 374.072 0 690.163 XINC 0.001
TYPE 3 347.359 0 641.402 XINC 0.001
TYPE 3 348.825 0 647.223 XINC 0.001
TYPE 3 358.963 0 687.483 XINC 0.001
TYPE 3 360.429 0 693.303 XINC 0.001
LOAD GENERATION 1
TYPE 1 377.514 0 634.219 XINC 0.001
TYPE 1 378.997 0 640.033 XINC 0.001
TYPE 1 389.256 0 680.245 XINC 0.001
TYPE 1 390.739 0 686.059 XINC 0.001
TYPE 2 363.924 0 637.582 XINC 0.001
TYPE 2 365.407 0 643.397 XINC 0.001

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TYPE 2 375.667 0 683.613 XINC 0.001
TYPE 2 377.15 0 689.427 XINC 0.001
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TYPE 3 351.771 0 646.565 XINC 0.001
TYPE 3 362.033 0 686.793 XINC 0.001
TYPE 3 363.517 0 692.609 XINC 0.001
LOAD GENERATION 1
TYPE 1 380.42 0 633.473 XINC 0.001
TYPE 1 381.921 0 639.282 XINC 0.001
TYPE 1 392.303 0 679.463 XINC 0.001
TYPE 1 393.804 0 685.272 XINC 0.001
TYPE 2 366.84 0 636.878 XINC 0.001
TYPE 2 368.342 0 642.688 XINC 0.001
TYPE 2 378.725 0 682.872 XINC 0.001
TYPE 2 380.226 0 688.682 XINC 0.001
TYPE 3 353.213 0 640.087 XINC 0.001
TYPE 3 354.715 0 645.899 XINC 0.001
TYPE 3 365.101 0 686.095 XINC 0.001
TYPE 3 366.602 0 691.906 XINC 0.001
LOAD GENERATION 1
TYPE 1 383.323 0 632.718 XINC 0.001
TYPE 1 384.842 0 638.523 XINC 0.001
TYPE 1 395.348 0 678.671 XINC 0.001
TYPE 1 396.867 0 684.475 XINC 0.001
TYPE 2 369.754 0 636.165 XINC 0.001
TYPE 2 371.273 0 641.97 XINC 0.001
TYPE 2 381.781 0 682.122 XINC 0.001
TYPE 2 383.3 0 687.927 XINC 0.001
TYPE 3 356.137 0 639.416 XINC 0.001
TYPE 3 357.657 0 645.223 XINC 0.001
TYPE 3 368.167 0 685.387 XINC 0.001
TYPE 3 369.686 0 691.194 XINC 0.001
LOAD GENERATION 1
TYPE 1 386.224 0 631.954 XINC 0.001
TYPE 1 387.761 0 637.754 XINC 0.001
TYPE 1 398.391 0 677.87 XINC 0.001
TYPE 1 399.928 0 683.669 XINC 0.001
TYPE 2 372.666 0 635.443 XINC 0.001
TYPE 2 374.203 0 641.243 XINC 0.001
TYPE 2 384.834 0 681.363 XINC 0.001
TYPE 2 386.371 0 687.163 XINC 0.001
TYPE 3 359.059 0 638.736 XINC 0.001
TYPE 3 360.596 0 644.538 XINC 0.001
TYPE 3 371.23 0 684.669 XINC 0.001
TYPE 3 372.768 0 690.471 XINC 0.001
LOAD GENERATION 1
TYPE 1 389.123 0 631.181 XINC 0.001
TYPE 1 390.678 0 636.976 XINC 0.001
TYPE 1 401.431 0 677.059 XINC 0.001
TYPE 1 402.986 0 682.854 XINC 0.001
TYPE 2 375.576 0 634.712 XINC 0.001
TYPE 2 377.131 0 640.507 XINC 0.001
TYPE 2 387.885 0 680.594 XINC 0.001
TYPE 2 389.44 0 686.389 XINC 0.001
TYPE 3 361.979 0 638.047 XINC 0.001
TYPE 3 363.534 0 643.844 XINC 0.001
TYPE 3 374.292 0 683.942 XINC 0.001
TYPE 3 375.847 0 689.74 XINC 0.001
LOAD GENERATION 1
TYPE 1 392.019 0 630.4 XINC 0.001
TYPE 1 393.592 0 636.19 XINC 0.001
TYPE 1 404.469 0 676.239 XINC 0.001
TYPE 1 406.042 0 682.029 XINC 0.001
TYPE 2 378.483 0 633.972 XINC 0.001
TYPE 2 380.056 0 639.762 XINC 0.001
TYPE 2 390.934 0 679.816 XINC 0.001
TYPE 2 392.507 0 685.606 XINC 0.001
TYPE 3 364.896 0 637.349 XINC 0.001
TYPE 3 366.47 0 643.141 XINC 0.001
TYPE 3 377.351 0 683.206 XINC 0.001
TYPE 3 378.924 0 688.999 XINC 0.001
LOAD GENERATION 1
TYPE 1 394.913 0 629.609 XINC 0.001
TYPE 1 396.504 0 635.394 XINC 0.001
TYPE 1 407.504 0 675.41 XINC 0.001
TYPE 1 409.095 0 681.195 XINC 0.001
TYPE 2 381.388 0 633.223 XINC 0.001
TYPE 2 382.979 0 639.009 XINC 0.001
TYPE 2 393.98 0 679.028 XINC 0.001

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TYPE 2 395.571 0 684.814 XINC 0.001
TYPE 3 367.812 0 636.641 XINC 0.001
TYPE 3 369.403 0 642.429 XINC 0.001
TYPE 3 380.408 0 682.46 XINC 0.001
TYPE 3 381.999 0 688.248 XINC 0.001
LOAD GENERATION 1
TYPE 1 397.805 0 628.809 XINC 0.001
TYPE 1 399.413 0 634.59 XINC 0.001
TYPE 1 410.537 0 674.571 XINC 0.001
TYPE 1 412.145 0 680.351 XINC 0.001
TYPE 2 384.291 0 632.465 XINC 0.001
TYPE 2 385.899 0 638.246 XINC 0.001
TYPE 2 397.024 0 678.231 XINC 0.001
TYPE 2 398.632 0 684.012 XINC 0.001
TYPE 3 370.725 0 635.925 XINC 0.001
TYPE 3 372.334 0 641.708 XINC 0.001
TYPE 3 383.462 0 681.705 XINC 0.001
TYPE 3 385.071 0 687.488 XINC 0.001
LOAD GENERATION 1
TYPE 1 400.694 0 628 XINC 0.001
TYPE 1 402.32 0 633.776 XINC 0.001
TYPE 1 413.567 0 673.723 XINC 0.001
TYPE 1 415.193 0 679.498 XINC 0.001
TYPE 2 387.191 0 631.698 XINC 0.001
TYPE 2 388.817 0 637.474 XINC 0.001
TYPE 2 400.065 0 677.424 XINC 0.001
TYPE 2 401.692 0 683.2 XINC 0.001
TYPE 3 373.636 0 635.2 XINC 0.001
TYPE 3 375.263 0 640.978 XINC 0.001
TYPE 3 386.514 0 680.941 XINC 0.001
TYPE 3 388.141 0 686.718 XINC 0.001
LOAD GENERATION 1
TYPE 1 403.58 0 627.183 XINC 0.001
TYPE 1 405.224 0 632.953 XINC 0.001
TYPE 1 416.594 0 672.865 XINC 0.001
TYPE 1 418.238 0 678.636 XINC 0.001
TYPE 2 390.089 0 630.922 XINC 0.001
TYPE 2 391.733 0 636.693 XINC 0.001
TYPE 2 403.104 0 676.609 XINC 0.001
TYPE 2 404.748 0 682.38 XINC 0.001
TYPE 3 376.545 0 634.466 XINC 0.001
TYPE 3 378.19 0 640.239 XINC 0.001
TYPE 3 389.564 0 680.167 XINC 0.001
TYPE 3 391.208 0 685.939 XINC 0.001
LOAD GENERATION 1
TYPE 1 406.464 0 626.357 XINC 0.001
TYPE 1 408.126 0 632.122 XINC 0.001
TYPE 1 419.619 0 671.999 XINC 0.001
TYPE 1 421.281 0 677.764 XINC 0.001
TYPE 2 392.984 0 630.137 XINC 0.001
TYPE 2 394.646 0 635.903 XINC 0.001
TYPE 2 406.141 0 675.784 XINC 0.001
TYPE 2 407.802 0 681.549 XINC 0.001
TYPE 3 379.451 0 633.723 XINC 0.001
TYPE 3 381.114 0 639.491 XINC 0.001
TYPE 3 392.611 0 679.383 XINC 0.001
TYPE 3 394.274 0 685.151 XINC 0.001
LOAD GENERATION 1
TYPE 1 409.346 0 625.521 XINC 0.001
TYPE 1 411.025 0 631.281 XINC 0.001
TYPE 1 422.641 0 671.123 XINC 0.001
TYPE 1 424.321 0 676.883 XINC 0.001
TYPE 2 395.877 0 629.343 XINC 0.001
TYPE 2 397.557 0 635.104 XINC 0.001
TYPE 2 409.174 0 674.949 XINC 0.001
TYPE 2 410.854 0 680.71 XINC 0.001
TYPE 3 382.356 0 632.971 XINC 0.001
TYPE 3 384.036 0 638.733 XINC 0.001
TYPE 3 395.656 0 678.59 XINC 0.001
TYPE 3 397.336 0 684.353 XINC 0.001
LOAD GENERATION 1
TYPE 1 412.224 0 624.677 XINC 0.001
TYPE 1 413.922 0 630.432 XINC 0.001
TYPE 1 425.661 0 670.237 XINC 0.001
TYPE 1 427.358 0 675.992 XINC 0.001
TYPE 2 398.768 0 628.541 XINC 0.001
TYPE 2 400.465 0 634.296 XINC 0.001
TYPE 2 412.206 0 674.105 XINC 0.001
TYPE 2 413.903 0 679.861 XINC 0.001

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TYPE 3 385.258 0 632.21 XINC 0.001
TYPE 3 386.955 0 637.967 XINC 0.001
TYPE 3 398.699 0 677.788 XINC 0.001
TYPE 3 400.397 0 683.545 XINC 0.001
LOAD GENERATION 1
TYPE 1 415.1 0 623.824 XINC 0.001
TYPE 1 416.815 0 629.574 XINC 0.001
TYPE 1 428.677 0 669.342 XINC 0.001
TYPE 1 430.392 0 675.092 XINC 0.001
TYPE 2 401.656 0 627.729 XINC 0.001
TYPE 2 403.371 0 633.479 XINC 0.001
TYPE 2 415.234 0 673.252 XINC 0.001
TYPE 2 416.949 0 679.002 XINC 0.001
TYPE 3 388.157 0 631.44 XINC 0.001
TYPE 3 389.873 0 637.192 XINC 0.001
TYPE 3 401.739 0 676.976 XINC 0.001
TYPE 3 403.454 0 682.728 XINC 0.001
LOAD GENERATION 1
TYPE 1 417.974 0 622.962 XINC 0.001
TYPE 1 419.707 0 628.707 XINC 0.001
TYPE 1 431.691 0 668.438 XINC 0.001
TYPE 1 433.424 0 674.183 XINC 0.001
TYPE 2 404.542 0 626.909 XINC 0.001
TYPE 2 406.275 0 632.653 XINC 0.001
TYPE 2 418.26 0 672.389 XINC 0.001
TYPE 2 419.993 0 678.134 XINC 0.001
TYPE 3 391.054 0 630.661 XINC 0.001
TYPE 3 392.788 0 636.408 XINC 0.001
TYPE 3 404.776 0 676.156 XINC 0.001
TYPE 3 406.51 0 681.902 XINC 0.001
LOAD GENERATION 1
TYPE 1 420.845 0 622.091 XINC 0.001
TYPE 1 422.595 0 627.83 XINC 0.001
TYPE 1 434.702 0 667.525 XINC 0.001
TYPE 1 436.452 0 673.264 XINC 0.001
TYPE 2 407.425 0 626.079 XINC 0.001
TYPE 2 409.175 0 631.819 XINC 0.001
TYPE 2 421.283 0 671.517 XINC 0.001
TYPE 2 423.034 0 677.257 XINC 0.001
TYPE 3 393.949 0 629.873 XINC 0.001
TYPE 3 395.7 0 635.615 XINC 0.001
TYPE 3 407.811 0 675.325 XINC 0.001
TYPE 3 409.562 0 681.066 XINC 0.001
LOAD GENERATION 1
TYPE 1 423.713 0 621.212 XINC 0.001
TYPE 1 425.481 0 626.945 XINC 0.001
TYPE 1 437.71 0 666.603 XINC 0.001
TYPE 1 439.478 0 672.336 XINC 0.001
TYPE 2 410.305 0 625.241 XINC 0.001
TYPE 2 412.074 0 630.975 XINC 0.001
TYPE 2 424.304 0 670.636 XINC 0.001
TYPE 2 426.072 0 676.37 XINC 0.001
TYPE 3 396.841 0 629.077 XINC 0.001
TYPE 3 398.61 0 634.813 XINC 0.001
TYPE 3 410.844 0 674.485 XINC 0.001
TYPE 3 412.612 0 680.221 XINC 0.001
LOAD GENERATION 1
TYPE 1 426.578 0 620.323 XINC 0.001
TYPE 1 428.364 0 626.051 XINC 0.001
TYPE 1 440.715 0 665.671 XINC 0.001
TYPE 1 442.501 0 671.399 XINC 0.001
TYPE 2 413.183 0 624.394 XINC 0.001
TYPE 2 414.969 0 630.122 XINC 0.001
TYPE 2 427.322 0 669.746 XINC 0.001
TYPE 2 429.108 0 675.474 XINC 0.001
TYPE 3 399.731 0 628.271 XINC 0.001
TYPE 3 401.517 0 634.001 XINC 0.001
TYPE 3 413.873 0 673.636 XINC 0.001
TYPE 3 415.66 0 679.367 XINC 0.001
LOAD GENERATION 1
TYPE 1 429.441 0 619.426 XINC 0.001
TYPE 1 431.244 0 625.149 XINC 0.001
TYPE 1 443.718 0 664.73 XINC 0.001
TYPE 1 445.521 0 670.452 XINC 0.001
TYPE 2 416.059 0 623.538 XINC 0.001
TYPE 2 417.862 0 629.261 XINC 0.001
TYPE 2 430.337 0 668.846 XINC 0.001
TYPE 2 432.14 0 674.569 XINC 0.001
TYPE 3 402.618 0 627.456 XINC 0.001

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TYPE 3 404.422 0 633.181 XINC 0.001
TYPE 3 416.901 0 672.778 XINC 0.001
TYPE 3 418.705 0 678.503 XINC 0.001
LOAD GENERATION 1
TYPE 1 432.301 0 618.52 XINC 0.001
TYPE 1 434.122 0 624.237 XINC 0.001
TYPE 1 446.717 0 663.779 XINC 0.001
TYPE 1 448.538 0 669.496 XINC 0.001
TYPE 2 418.931 0 622.673 XINC 0.001
TYPE 2 420.752 0 628.391 XINC 0.001
TYPE 2 433.349 0 667.937 XINC 0.001
TYPE 2 435.17 0 673.654 XINC 0.001
TYPE 3 405.503 0 626.633 XINC 0.001
TYPE 3 407.325 0 632.352 XINC 0.001
TYPE 3 419.925 0 671.91 XINC 0.001
TYPE 3 421.747 0 677.63 XINC 0.001
LOAD GENERATION 1
TYPE 1 435.158 0 617.605 XINC 0.001
TYPE 1 436.997 0 623.316 XINC 0.001
TYPE 1 449.714 0 662.82 XINC 0.001
TYPE 1 451.553 0 668.531 XINC 0.001
TYPE 2 421.801 0 621.799 XINC 0.001
TYPE 2 423.64 0 627.511 XINC 0.001
TYPE 2 436.359 0 667.018 XINC 0.001
TYPE 2 438.197 0 672.73 XINC 0.001
TYPE 3 408.385 0 625.801 XINC 0.001
TYPE 3 410.225 0 631.514 XINC 0.001
TYPE 3 422.947 0 671.033 XINC 0.001
TYPE 3 424.786 0 676.747 XINC 0.001
LOAD GENERATION 1
TYPE 1 438.012 0 616.681 XINC 0.001
TYPE 1 439.869 0 622.387 XINC 0.001
TYPE 1 452.708 0 661.851 XINC 0.001
TYPE 1 454.564 0 667.557 XINC 0.001
TYPE 2 424.668 0 620.917 XINC 0.001
TYPE 2 426.525 0 626.623 XINC 0.001
TYPE 2 439.365 0 666.091 XINC 0.001
TYPE 2 441.222 0 671.797 XINC 0.001
TYPE 3 411.265 0 624.96 XINC 0.001
TYPE 3 413.122 0 630.667 XINC 0.001
TYPE 3 425.966 0 670.147 XINC 0.001
TYPE 3 427.823 0 675.855 XINC 0.001
LOAD GENERATION 1
TYPE 1 440.864 0 615.749 XINC 0.001
TYPE 1 442.738 0 621.449 XINC 0.001
TYPE 1 455.698 0 660.873 XINC 0.001
TYPE 1 457.572 0 666.573 XINC 0.001
TYPE 2 427.533 0 620.025 XINC 0.001
TYPE 2 429.407 0 625.726 XINC 0.001
TYPE 2 442.369 0 665.154 XINC 0.001
TYPE 2 444.243 0 670.854 XINC 0.001
TYPE 3 414.142 0 624.109 XINC 0.001
TYPE 3 416.017 0 629.812 XINC 0.001
TYPE 3 428.982 0 669.251 XINC 0.001
TYPE 3 430.857 0 674.953 XINC 0.001
LOAD GENERATION 1
TYPE 1 443.712 0 614.807 XINC 0.001
TYPE 1 445.604 0 620.502 XINC 0.001
TYPE 1 458.686 0 659.886 XINC 0.001
TYPE 1 460.577 0 665.58 XINC 0.001
TYPE 2 430.395 0 619.125 XINC 0.001
TYPE 2 432.286 0 624.82 XINC 0.001
TYPE 2 445.37 0 664.208 XINC 0.001
TYPE 2 447.261 0 669.902 XINC 0.001
TYPE 3 417.016 0 623.25 XINC 0.001
TYPE 3 418.909 0 628.947 XINC 0.001
TYPE 3 431.996 0 668.347 XINC 0.001
TYPE 3 433.888 0 674.043 XINC 0.001
LOAD GENERATION 1
TYPE 1 446.558 0 613.857 XINC 0.001
TYPE 1 448.467 0 619.546 XINC 0.001
TYPE 1 461.67 0 658.889 XINC 0.001
TYPE 1 463.579 0 664.577 XINC 0.001
TYPE 2 433.254 0 618.216 XINC 0.001
TYPE 2 435.163 0 623.905 XINC 0.001
TYPE 2 448.368 0 663.252 XINC 0.001
TYPE 2 450.277 0 668.941 XINC 0.001
TYPE 3 419.888 0 622.383 XINC 0.001
TYPE 3 421.798 0 628.073 XINC 0.001

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TYPE 3 435.006 0 667.432 XINC 0.001
TYPE 3 436.916 0 673.123 XINC 0.001
LOAD GENERATION 1
TYPE 1 449.4 0 612.899 XINC 0.001
TYPE 1 451.327 0 618.581 XINC 0.001
TYPE 1 464.652 0 657.883 XINC 0.001
TYPE 1 466.578 0 663.566 XINC 0.001
TYPE 2 436.11 0 617.298 XINC 0.001
TYPE 2 438.036 0 622.981 XINC 0.001
TYPE 2 451.363 0 662.288 XINC 0.001
TYPE 2 453.289 0 667.97 XINC 0.001
TYPE 3 422.757 0 621.506 XINC 0.001
TYPE 3 424.684 0 627.191 XINC 0.001
TYPE 3 438.014 0 666.509 XINC 0.001
TYPE 3 439.941 0 672.193 XINC 0.001
LOAD GENERATION 1
TYPE 1 452.24 0 611.931 XINC 0.001
TYPE 1 454.184 0 617.607 XINC 0.001
TYPE 1 467.63 0 656.869 XINC 0.001
TYPE 1 469.574 0 662.545 XINC 0.001
TYPE 2 438.963 0 616.371 XINC 0.001
TYPE 2 440.907 0 622.048 XINC 0.001
TYPE 2 454.355 0 661.314 XINC 0.001
TYPE 2 456.299 0 666.99 XINC 0.001
TYPE 3 425.624 0 620.62 XINC 0.001
TYPE 3 427.568 0 626.299 XINC 0.001
TYPE 3 441.019 0 665.576 XINC 0.001
TYPE 3 442.964 0 671.255 XINC 0.001
LOAD GENERATION 1
TYPE 1 455.077 0 610.955 XINC 0.001
TYPE 1 457.038 0 616.625 XINC 0.001
TYPE 1 470.605 0 655.845 XINC 0.001
TYPE 1 472.567 0 661.515 XINC 0.001
TYPE 2 441.814 0 615.436 XINC 0.001
TYPE 2 443.775 0 621.107 XINC 0.001
TYPE 2 457.344 0 660.33 XINC 0.001
TYPE 2 459.305 0 666.001 XINC 0.001
TYPE 3 428.487 0 619.726 XINC 0.001
TYPE 3 430.449 0 625.399 XINC 0.001
TYPE 3 444.022 0 664.634 XINC 0.001
TYPE 3 445.984 0 670.306 XINC 0.001
LOAD GENERATION 1
TYPE 1 457.91 0 609.969 XINC 0.001
TYPE 1 459.889 0 615.634 XINC 0.001
TYPE 1 473.577 0 654.811 XINC 0.001
TYPE 1 475.556 0 660.476 XINC 0.001
TYPE 2 444.661 0 614.492 XINC 0.001
TYPE 2 446.64 0 620.157 XINC 0.001
TYPE 2 460.329 0 659.338 XINC 0.001
TYPE 2 462.309 0 665.003 XINC 0.001
TYPE 3 431.348 0 618.823 XINC 0.001
TYPE 3 433.328 0 624.49 XINC 0.001
TYPE 3 447.021 0 663.683 XINC 0.001
TYPE 3 449 0 669.349 XINC 0.001
LOAD GENERATION 1
TYPE 1 460.741 0 608.976 XINC 0.001
TYPE 1 462.737 0 614.634 XINC 0.001
TYPE 1 476.546 0 653.769 XINC 0.001
TYPE 1 478.542 0 659.427 XINC 0.001
TYPE 2 447.506 0 613.539 XINC 0.001
TYPE 2 449.502 0 619.197 XINC 0.001
TYPE 2 463.312 0 658.337 XINC 0.001
TYPE 2 465.309 0 663.995 XINC 0.001
TYPE 3 434.206 0 617.911 XINC 0.001
TYPE 3 436.203 0 623.571 XINC 0.001
TYPE 3 450.017 0 662.722 XINC 0.001
TYPE 3 452.014 0 668.382 XINC 0.001
LOAD GENERATION 1
TYPE 1 463.568 0 607.973 XINC 0.001
TYPE 1 465.582 0 613.625 XINC 0.001
TYPE 1 479.512 0 652.717 XINC 0.001
TYPE 1 481.525 0 658.369 XINC 0.001
TYPE 2 450.347 0 612.577 XINC 0.001
TYPE 2 452.361 0 618.229 XINC 0.001
TYPE 2 466.292 0 657.326 XINC 0.001
TYPE 2 468.306 0 662.978 XINC 0.001
TYPE 3 437.061 0 616.99 XINC 0.001
TYPE 3 439.076 0 622.644 XINC 0.001
TYPE 3 453.01 0 661.752 XINC 0.001

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TYPE 3 455.025 0 667.406 XINC 0.001
LOAD GENERATION 1
TYPE 1 466.393 0 606.962 XINC 0.001
TYPE 1 468.424 0 612.607 XINC 0.001
TYPE 1 482.474 0 651.657 XINC 0.001
TYPE 1 484.505 0 657.302 XINC 0.001
TYPE 2 453.186 0 611.606 XINC 0.001
TYPE 2 455.217 0 617.253 XINC 0.001
TYPE 2 469.269 0 656.306 XINC 0.001
TYPE 2 471.3 0 661.952 XINC 0.001
TYPE 3 439.914 0 616.061 XINC 0.001
TYPE 3 441.946 0 621.709 XINC 0.001
TYPE 3 456.001 0 660.773 XINC 0.001
TYPE 3 458.033 0 666.421 XINC 0.001
LOAD GENERATION 1
TYPE 1 469.214 0 605.942 XINC 0.001
TYPE 1 471.263 0 611.581 XINC 0.001
TYPE 1 485.433 0 650.587 XINC 0.001
TYPE 1 487.482 0 656.226 XINC 0.001
TYPE 2 456.022 0 610.627 XINC 0.001
TYPE 2 458.07 0 616.267 XINC 0.001
TYPE 2 472.242 0 655.277 XINC 0.001
TYPE 2 474.291 0 660.917 XINC 0.001
TYPE 3 442.763 0 615.122 XINC 0.001
TYPE 3 444.813 0 620.764 XINC 0.001
TYPE 3 458.988 0 659.785 XINC 0.001
TYPE 3 461.037 0 665.427 XINC 0.001
LOAD GENERATION 1
TYPE 1 472.032 0 604.913 XINC 0.001
TYPE 1 474.098 0 610.546 XINC 0.001
TYPE 1 488.389 0 649.508 XINC 0.001
TYPE 1 490.455 0 655.141 XINC 0.001
TYPE 2 458.854 0 609.639 XINC 0.001
TYPE 2 460.92 0 615.273 XINC 0.001
TYPE 2 475.212 0 654.239 XINC 0.001
TYPE 2 477.278 0 659.872 XINC 0.001
TYPE 3 445.61 0 614.175 XINC 0.001
TYPE 3 447.676 0 619.81 XINC 0.001
TYPE 3 461.972 0 658.788 XINC 0.001
TYPE 3 464.039 0 664.423 XINC 0.001
LOAD GENERATION 1
TYPE 1 474.847 0 603.876 XINC 0.001
TYPE 1 476.931 0 609.502 XINC 0.001
TYPE 1 491.341 0 648.42 XINC 0.001
TYPE 1 493.424 0 654.047 XINC 0.001
TYPE 2 461.684 0 608.642 XINC 0.001
TYPE 2 463.767 0 614.27 XINC 0.001
TYPE 2 478.179 0 653.191 XINC 0.001
TYPE 2 480.263 0 658.818 XINC 0.001
TYPE 3 448.453 0 613.219 XINC 0.001
TYPE 3 450.537 0 618.848 XINC 0.001
TYPE 3 464.953 0 657.781 XINC 0.001
TYPE 3 467.037 0 663.41 XINC 0.001
LOAD GENERATION 1
TYPE 1 477.659 0 602.83 XINC 0.001
TYPE 1 479.76 0 608.45 XINC 0.001
TYPE 1 494.29 0 647.323 XINC 0.001
TYPE 1 496.391 0 652.943 XINC 0.001
TYPE 2 464.51 0 607.637 XINC 0.001
TYPE 2 466.611 0 613.258 XINC 0.001
TYPE 2 481.143 0 652.135 XINC 0.001
TYPE 2 483.244 0 657.755 XINC 0.001
TYPE 3 451.294 0 612.254 XINC 0.001
TYPE 3 453.395 0 617.877 XINC 0.001
TYPE 3 467.931 0 656.765 XINC 0.001
TYPE 3 470.033 0 662.388 XINC 0.001
LOAD GENERATION 1
TYPE 1 480.467 0 601.775 XINC 0.001
TYPE 1 482.586 0 607.389 XINC 0.001
TYPE 1 497.236 0 646.217 XINC 0.001
TYPE 1 499.354 0 651.83 XINC 0.001
TYPE 2 467.334 0 606.623 XINC 0.001
TYPE 2 469.452 0 612.237 XINC 0.001
TYPE 2 484.104 0 651.069 XINC 0.001
TYPE 2 486.222 0 656.683 XINC 0.001
TYPE 3 454.132 0 611.281 XINC 0.001
TYPE 3 456.25 0 616.897 XINC 0.001
TYPE 3 470.906 0 655.74 XINC 0.001
TYPE 3 473.025 0 661.356 XINC 0.001

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LOAD GENERATION 1
TYPE 1 483.273 0 600.712 XINC 0.001
TYPE 1 485.408 0 606.319 XINC 0.001
TYPE 1 500.178 0 645.101 XINC 0.001
TYPE 1 502.313 0 650.708 XINC 0.001
TYPE 2 470.154 0 605.6 XINC 0.001
TYPE 2 472.289 0 611.207 XINC 0.001
TYPE 2 487.061 0 649.994 XINC 0.001
TYPE 2 489.196 0 655.602 XINC 0.001
TYPE 3 456.966 0 610.299 XINC 0.001
TYPE 3 459.102 0 615.908 XINC 0.001
TYPE 3 473.878 0 654.706 XINC 0.001
TYPE 3 476.014 0 660.316 XINC 0.001
LOAD GENERATION 1
TYPE 1 486.075 0 599.639 XINC 0.001
TYPE 1 488.227 0 605.24 XINC 0.001
TYPE 1 503.117 0 643.977 XINC 0.001
TYPE 1 505.269 0 649.578 XINC 0.001
TYPE 2 472.971 0 604.568 XINC 0.001
TYPE 2 475.124 0 610.169 XINC 0.001
TYPE 2 490.015 0 648.91 XINC 0.001
TYPE 2 492.167 0 654.511 XINC 0.001
TYPE 3 459.798 0 609.308 XINC 0.001
TYPE 3 461.951 0 614.911 XINC 0.001
TYPE 3 476.846 0 653.663 XINC 0.001
TYPE 3 479 0 659.266 XINC 0.001
LOAD GENERATION 1
TYPE 1 488.873 0 598.559 XINC 0.001
TYPE 1 491.043 0 604.153 XINC 0.001
TYPE 1 506.052 0 642.844 XINC 0.001
TYPE 1 508.222 0 648.438 XINC 0.001
TYPE 2 475.785 0 603.528 XINC 0.001
TYPE 2 477.955 0 609.122 XINC 0.001
TYPE 2 492.965 0 647.817 XINC 0.001
TYPE 2 495.135 0 653.411 XINC 0.001
TYPE 3 462.626 0 608.308 XINC 0.001
TYPE 3 464.797 0 613.904 XINC 0.001
TYPE 3 479.811 0 652.611 XINC 0.001
TYPE 3 481.982 0 658.207 XINC 0.001
LOAD GENERATION 1
TYPE 1 491.668 0 597.47 XINC 0.001
TYPE 1 493.856 0 603.057 XINC 0.001
TYPE 1 508.984 0 641.701 XINC 0.001
TYPE 1 511.171 0 647.288 XINC 0.001
TYPE 2 478.595 0 602.479 XINC 0.001
TYPE 2 480.783 0 608.067 XINC 0.001
TYPE 2 495.912 0 646.715 XINC 0.001
TYPE 2 498.1 0 652.303 XINC 0.001
TYPE 3 465.452 0 607.3 XINC 0.001
TYPE 3 467.64 0 612.889 XINC 0.001
TYPE 3 482.773 0 651.549 XINC 0.001
TYPE 3 484.961 0 657.138 XINC 0.001
LOAD GENERATION 1
TYPE 1 494.46 0 596.372 XINC 0.001
TYPE 1 496.665 0 601.952 XINC 0.001
TYPE 1 511.912 0 640.55 XINC 0.001
TYPE 1 514.116 0 646.13 XINC 0.001
TYPE 2 481.403 0 601.421 XINC 0.001
TYPE 2 483.607 0 607.002 XINC 0.001
TYPE 2 498.856 0 645.604 XINC 0.001
TYPE 2 501.061 0 651.185 XINC 0.001
TYPE 3 468.274 0 606.283 XINC 0.001
TYPE 3 470.479 0 611.865 XINC 0.001
TYPE 3 485.732 0 650.478 XINC 0.001
TYPE 3 487.937 0 656.061 XINC 0.001
LOAD GENERATION 1
TYPE 1 497.249 0 595.265 XINC 0.001
TYPE 1 499.47 0 600.839 XINC 0.001
TYPE 1 514.836 0 639.389 XINC 0.001
TYPE 1 517.058 0 644.963 XINC 0.001
TYPE 2 484.207 0 600.355 XINC 0.001
TYPE 2 486.429 0 605.929 XINC 0.001
TYPE 2 501.796 0 644.483 XINC 0.001
TYPE 2 504.018 0 650.058 XINC 0.001
TYPE 3 471.093 0 605.257 XINC 0.001
TYPE 3 473.316 0 610.833 XINC 0.001
TYPE 3 488.687 0 649.398 XINC 0.001
TYPE 3 490.91 0 654.974 XINC 0.001
LOAD GENERATION 1

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TYPE 1 500.034 0 594.15 XINC 0.001
TYPE 1 502.273 0 599.717 XINC 0.001
TYPE 1 517.757 0 638.22 XINC 0.001
TYPE 1 519.996 0 643.786 XINC 0.001
TYPE 2 487.008 0 599.28 XINC 0.001
TYPE 2 489.247 0 604.847 XINC 0.001
TYPE 2 504.733 0 643.354 XINC 0.001
TYPE 2 506.972 0 648.921 XINC 0.001
TYPE 3 473.909 0 604.222 XINC 0.001
TYPE 3 476.149 0 609.791 XINC 0.001
TYPE 3 491.639 0 648.309 XINC 0.001
TYPE 3 493.879 0 653.878 XINC 0.001
LOAD GENERATION 1
TYPE 1 502.815 0 593.026 XINC 0.001
TYPE 1 505.071 0 598.586 XINC 0.001
TYPE 1 520.675 0 637.041 XINC 0.001
TYPE 1 522.931 0 642.601 XINC 0.001
TYPE 2 489.805 0 598.197 XINC 0.001
TYPE 2 492.061 0 603.757 XINC 0.001
TYPE 2 507.666 0 642.216 XINC 0.001
TYPE 2 509.923 0 647.776 XINC 0.001
TYPE 3 476.722 0 603.179 XINC 0.001
TYPE 3 478.979 0 608.741 XINC 0.001
TYPE 3 494.588 0 647.211 XINC 0.001
TYPE 3 496.845 0 652.773 XINC 0.001
LOAD GENERATION 1
TYPE 1 505.594 0 591.894 XINC 0.001
TYPE 1 507.867 0 597.447 XINC 0.001
TYPE 1 523.589 0 635.854 XINC 0.001
TYPE 1 525.862 0 641.406 XINC 0.001
TYPE 2 492.599 0 597.104 XINC 0.001
TYPE 2 494.873 0 602.658 XINC 0.001
TYPE 2 510.596 0 641.068 XINC 0.001
TYPE 2 512.869 0 646.622 XINC 0.001
TYPE 3 479.532 0 602.127 XINC 0.001
TYPE 3 481.806 0 607.682 XINC 0.001
TYPE 3 497.533 0 646.104 XINC 0.001
TYPE 3 499.807 0 651.659 XINC 0.001
LOAD GENERATION 1
TYPE 1 508.368 0 590.753 XINC 0.001
TYPE 1 510.658 0 596.299 XINC 0.001
TYPE 1 526.499 0 634.657 XINC 0.001
TYPE 1 528.789 0 640.203 XINC 0.001
TYPE 2 495.39 0 596.004 XINC 0.001
TYPE 2 497.681 0 601.55 XINC 0.001
TYPE 2 513.522 0 639.912 XINC 0.001
TYPE 2 515.813 0 645.458 XINC 0.001
TYPE 3 482.338 0 601.067 XINC 0.001
TYPE 3 484.629 0 606.615 XINC 0.001
TYPE 3 500.475 0 644.988 XINC 0.001
TYPE 3 502.766 0 650.536 XINC 0.001
LOAD GENERATION 1
TYPE 1 511.139 0 589.604 XINC 0.001
TYPE 1 513.447 0 595.143 XINC 0.001
TYPE 1 529.405 0 633.452 XINC 0.001
TYPE 1 531.712 0 638.99 XINC 0.001
TYPE 2 498.178 0 594.894 XINC 0.001
TYPE 2 500.485 0 600.434 XINC 0.001
TYPE 2 516.445 0 638.746 XINC 0.001
TYPE 2 518.753 0 644.285 XINC 0.001
TYPE 3 485.141 0 599.998 XINC 0.001
TYPE 3 487.449 0 605.539 XINC 0.001
TYPE 3 503.414 0 643.863 XINC 0.001
TYPE 3 505.722 0 649.403 XINC 0.001
LOAD GENERATION 1
TYPE 1 513.907 0 588.446 XINC 0.001
TYPE 1 516.231 0 593.978 XINC 0.001
TYPE 1 532.308 0 632.237 XINC 0.001
TYPE 1 534.632 0 637.769 XINC 0.001
TYPE 2 500.961 0 593.776 XINC 0.001
TYPE 2 503.286 0 599.309 XINC 0.001
TYPE 2 519.364 0 637.572 XINC 0.001
TYPE 2 521.689 0 643.104 XINC 0.001
TYPE 3 487.941 0 598.92 XINC 0.001
TYPE 3 490.266 0 604.454 XINC 0.001
TYPE 3 506.349 0 642.728 XINC 0.001
TYPE 3 508.674 0 648.262 XINC 0.001
LOAD GENERATION 1
TYPE 1 516.671 0 587.28 XINC 0.001

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TYPE 1 519.012 0 592.804 XINC 0.001
TYPE 1 535.207 0 631.014 XINC 0.001
TYPE 1 537.548 0 636.538 XINC 0.001
TYPE 2 503.742 0 592.65 XINC 0.001
TYPE 2 506.083 0 598.175 XINC 0.001
TYPE 2 522.28 0 636.388 XINC 0.001
TYPE 2 524.621 0 641.913 XINC 0.001
TYPE 3 490.737 0 597.834 XINC 0.001
TYPE 3 493.079 0 603.36 XINC 0.001
TYPE 3 509.28 0 641.585 XINC 0.001
TYPE 3 511.622 0 647.111 XINC 0.001
LOAD GENERATION 1
TYPE 1 519.431 0 586.105 XINC 0.001
TYPE 1 521.79 0 591.622 XINC 0.001
TYPE 1 538.102 0 629.781 XINC 0.001
TYPE 1 540.46 0 635.298 XINC 0.001
TYPE 2 506.519 0 591.515 XINC 0.001
TYPE 2 508.877 0 597.032 XINC 0.001
TYPE 2 525.191 0 635.196 XINC 0.001
TYPE 2 527.55 0 640.713 XINC 0.001
TYPE 3 493.53 0 596.739 XINC 0.001
TYPE 3 495.889 0 602.258 XINC 0.001
TYPE 3 512.208 0 640.433 XINC 0.001
TYPE 3 514.567 0 645.952 XINC 0.001
LOAD GENERATION 1
TYPE 1 522.188 0 584.921 XINC 0.001
TYPE 1 524.563 0 590.431 XINC 0.001
TYPE 1 540.993 0 628.54 XINC 0.001
TYPE 1 543.368 0 634.05 XINC 0.001
TYPE 2 509.292 0 590.371 XINC 0.001
TYPE 2 511.668 0 595.881 XINC 0.001
TYPE 2 528.099 0 633.994 XINC 0.001
TYPE 2 530.475 0 639.505 XINC 0.001
TYPE 3 496.32 0 595.635 XINC 0.001
TYPE 3 498.696 0 601.147 XINC 0.001
TYPE 3 515.132 0 639.271 XINC 0.001
TYPE 3 517.508 0 644.783 XINC 0.001
LOAD GENERATION 1
TYPE 1 524.941 0 583.729 XINC 0.001
TYPE 1 527.333 0 589.232 XINC 0.001
TYPE 1 543.881 0 627.29 XINC 0.001
TYPE 1 546.273 0 632.792 XINC 0.001
TYPE 2 512.062 0 589.219 XINC 0.001
TYPE 2 514.455 0 594.722 XINC 0.001
TYPE 2 531.004 0 632.784 XINC 0.001
TYPE 2 533.396 0 638.287 XINC 0.001
TYPE 3 499.106 0 594.523 XINC 0.001
TYPE 3 501.499 0 600.027 XINC 0.001
TYPE 3 518.053 0 638.101 XINC 0.001
TYPE 3 520.446 0 643.605 XINC 0.001
LOAD GENERATION 1
TYPE 1 527.69 0 582.529 XINC 0.001
TYPE 1 530.1 0 588.024 XINC 0.001
TYPE 1 546.764 0 626.031 XINC 0.001
TYPE 1 549.173 0 631.526 XINC 0.001
TYPE 2 514.829 0 588.058 XINC 0.001
TYPE 2 517.238 0 593.554 XINC 0.001
TYPE 2 533.904 0 631.565 XINC 0.001
TYPE 2 536.314 0 637.06 XINC 0.001
TYPE 3 501.889 0 593.402 XINC 0.001
TYPE 3 504.299 0 598.899 XINC 0.001
TYPE 3 520.97 0 636.921 XINC 0.001
TYPE 3 523.38 0 642.418 XINC 0.001
LOAD GENERATION 1
TYPE 1 530.436 0 581.32 XINC 0.001
TYPE 1 532.862 0 586.807 XINC 0.001
TYPE 1 549.644 0 624.763 XINC 0.001
TYPE 1 552.07 0 630.251 XINC 0.001
TYPE 2 517.591 0 586.889 XINC 0.001
TYPE 2 520.018 0 592.377 XINC 0.001
TYPE 2 536.801 0 630.336 XINC 0.001
TYPE 2 539.228 0 635.824 XINC 0.001
TYPE 3 504.668 0 592.272 XINC 0.001
TYPE 3 507.095 0 597.762 XINC 0.001
TYPE 3 523.883 0 635.733 XINC 0.001
TYPE 3 526.31 0 641.223 XINC 0.001
LOAD GENERATION 1
TYPE 1 533.178 0 580.103 XINC 0.001
TYPE 1 535.621 0 585.583 XINC 0.001

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TYPE 1 552.52 0 623.486 XINC 0.001
TYPE 1 554.963 0 628.966 XINC 0.001
TYPE 2 520.35 0 585.711 XINC 0.001
TYPE 2 522.794 0 591.192 XINC 0.001
TYPE 2 539.694 0 629.099 XINC 0.001
TYPE 2 542.138 0 634.58 XINC 0.001
TYPE 3 507.444 0 591.135 XINC 0.001
TYPE 3 509.888 0 596.617 XINC 0.001
TYPE 3 526.793 0 634.535 XINC 0.001
TYPE 3 529.237 0 640.018 XINC 0.001
LOAD GENERATION 1
TYPE 1 535.916 0 578.877 XINC 0.001
TYPE 1 538.376 0 584.349 XINC 0.001
TYPE 1 555.391 0 622.201 XINC 0.001
TYPE 1 557.851 0 627.673 XINC 0.001
TYPE 2 523.106 0 584.525 XINC 0.001
TYPE 2 525.566 0 589.998 XINC 0.001
TYPE 2 542.583 0 627.853 XINC 0.001
TYPE 2 545.044 0 633.326 XINC 0.001
TYPE 3 510.216 0 589.988 XINC 0.001
TYPE 3 512.677 0 595.463 XINC 0.001
TYPE 3 529.699 0 633.329 XINC 0.001
TYPE 3 532.16 0 638.804 XINC 0.001
LOAD GENERATION 1
TYPE 1 538.65 0 577.642 XINC 0.001
TYPE 1 541.127 0 583.107 XINC 0.001
TYPE 1 558.259 0 620.906 XINC 0.001
TYPE 1 560.736 0 626.371 XINC 0.001
TYPE 2 525.858 0 583.33 XINC 0.001
TYPE 2 528.335 0 588.796 XINC 0.001
TYPE 2 545.469 0 626.598 XINC 0.001
TYPE 2 547.946 0 632.063 XINC 0.001
TYPE 3 512.985 0 588.833 XINC 0.001
TYPE 3 515.463 0 594.3 XINC 0.001
TYPE 3 532.601 0 632.114 XINC 0.001
TYPE 3 535.079 0 637.581 XINC 0.001
LOAD GENERATION 1
TYPE 1 541.381 0 576.4 XINC 0.001
TYPE 1 543.875 0 581.857 XINC 0.001
TYPE 1 561.123 0 619.603 XINC 0.001
TYPE 1 563.617 0 625.06 XINC 0.001
TYPE 2 528.606 0 582.127 XINC 0.001
TYPE 2 531.1 0 587.585 XINC 0.001
TYPE 2 548.35 0 625.334 XINC 0.001
TYPE 2 550.844 0 630.792 XINC 0.001
TYPE 3 515.75 0 587.669 XINC 0.001
TYPE 3 518.245 0 593.129 XINC 0.001
TYPE 3 535.5 0 630.889 XINC 0.001
TYPE 3 537.994 0 636.349 XINC 0.001
LOAD GENERATION 1
TYPE 1 544.108 0 575.149 XINC 0.001
TYPE 1 546.618 0 580.598 XINC 0.001
TYPE 1 563.983 0 618.291 XINC 0.001
TYPE 1 566.494 0 623.74 XINC 0.001
TYPE 2 531.35 0 580.915 XINC 0.001
TYPE 2 533.861 0 586.365 XINC 0.001
TYPE 2 551.228 0 624.061 XINC 0.001
TYPE 2 553.738 0 629.511 XINC 0.001
TYPE 3 518.511 0 586.497 XINC 0.001
TYPE 3 521.023 0 591.949 XINC 0.001
TYPE 3 538.394 0 629.656 XINC 0.001
TYPE 3 540.906 0 635.108 XINC 0.001
LOAD GENERATION 1
TYPE 1 546.83 0 573.889 XINC 0.001
TYPE 1 549.358 0 579.331 XINC 0.001
TYPE 1 566.839 0 616.97 XINC 0.001
TYPE 1 569.366 0 622.411 XINC 0.001
TYPE 2 534.091 0 579.695 XINC 0.001
TYPE 2 536.619 0 585.137 XINC 0.001
TYPE 2 554.101 0 622.78 XINC 0.001
TYPE 2 556.629 0 628.222 XINC 0.001
TYPE 3 521.269 0 585.317 XINC 0.001
TYPE 3 523.798 0 590.761 XINC 0.001
TYPE 3 541.285 0 628.414 XINC 0.001
TYPE 3 543.814 0 633.858 XINC 0.001
LOAD GENERATION 1
TYPE 1 549.549 0 572.621 XINC 0.001
TYPE 1 552.093 0 578.055 XINC 0.001
TYPE 1 569.69 0 615.64 XINC 0.001

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TYPE 1 572.234 0 621.074 XINC 0.001
TYPE 2 536.828 0 578.466 XINC 0.001
TYPE 2 539.372 0 583.901 XINC 0.001
TYPE 2 556.971 0 621.489 XINC 0.001
TYPE 2 559.515 0 626.923 XINC 0.001
TYPE 3 524.024 0 584.128 XINC 0.001
TYPE 3 526.569 0 589.564 XINC 0.001
TYPE 3 544.172 0 627.163 XINC 0.001
TYPE 3 546.717 0 632.599 XINC 0.001
LOAD GENERATION 1
TYPE 1 552.264 0 571.345 XINC 0.001
TYPE 1 554.825 0 576.771 XINC 0.001
TYPE 1 572.538 0 614.301 XINC 0.001
TYPE 1 575.099 0 619.727 XINC 0.001
TYPE 2 539.561 0 577.229 XINC 0.001
TYPE 2 542.122 0 582.656 XINC 0.001
TYPE 2 559.837 0 620.19 XINC 0.001
TYPE 2 562.398 0 625.616 XINC 0.001
TYPE 3 526.774 0 582.93 XINC 0.001
TYPE 3 529.336 0 588.358 XINC 0.001
TYPE 3 547.056 0 625.903 XINC 0.001
TYPE 3 549.617 0 631.331 XINC 0.001
LOAD GENERATION 1
TYPE 1 554.975 0 570.06 XINC 0.001
TYPE 1 557.553 0 575.479 XINC 0.001
TYPE 1 575.381 0 612.954 XINC 0.001
TYPE 1 577.959 0 618.372 XINC 0.001
TYPE 2 542.29 0 575.984 XINC 0.001
TYPE 2 544.868 0 581.402 XINC 0.001
TYPE 2 562.698 0 618.881 XINC 0.001
TYPE 2 565.276 0 624.3 XINC 0.001
TYPE 3 529.521 0 581.724 XINC 0.001
TYPE 3 532.1 0 587.144 XINC 0.001
TYPE 3 549.935 0 624.634 XINC 0.001
TYPE 3 552.514 0 630.055 XINC 0.001
LOAD GENERATION 1
TYPE 1 557.682 0 568.767 XINC 0.001
TYPE 1 560.277 0 574.178 XINC 0.001
TYPE 1 578.221 0 611.598 XINC 0.001
TYPE 1 580.815 0 617.008 XINC 0.001
TYPE 2 545.016 0 574.73 XINC 0.001
TYPE 2 547.61 0 580.141 XINC 0.001
TYPE 2 565.556 0 617.564 XINC 0.001
TYPE 2 568.15 0 622.975 XINC 0.001
TYPE 3 532.264 0 580.509 XINC 0.001
TYPE 3 534.86 0 585.922 XINC 0.001
TYPE 3 552.81 0 623.357 XINC 0.001
TYPE 3 555.406 0 628.769 XINC 0.001
LOAD GENERATION 1
TYPE 1 560.385 0 567.466 XINC 0.001
TYPE 1 562.996 0 572.868 XINC 0.001
TYPE 1 581.056 0 610.233 XINC 0.001
TYPE 1 583.667 0 615.635 XINC 0.001
TYPE 2 547.737 0 573.468 XINC 0.001
TYPE 2 550.348 0 578.87 XINC 0.001
TYPE 2 568.409 0 616.239 XINC 0.001
TYPE 2 571.02 0 621.641 XINC 0.001
TYPE 3 535.004 0 579.286 XINC 0.001
TYPE 3 537.616 0 584.691 XINC 0.001
TYPE 3 555.682 0 622.07 XINC 0.001
TYPE 3 558.294 0 627.474 XINC 0.001
LOAD GENERATION 1
TYPE 1 563.084 0 566.157 XINC 0.001
TYPE 1 565.712 0 571.551 XINC 0.001
TYPE 1 583.886 0 608.859 XINC 0.001
TYPE 1 586.514 0 614.253 XINC 0.001
TYPE 2 550.455 0 572.197 XINC 0.001
TYPE 2 553.083 0 577.591 XINC 0.001
TYPE 2 571.259 0 614.904 XINC 0.001
TYPE 2 573.887 0 620.298 XINC 0.001
TYPE 3 537.739 0 578.055 XINC 0.001
TYPE 3 540.368 0 583.451 XINC 0.001
TYPE 3 558.549 0 620.775 XINC 0.001
TYPE 3 561.178 0 626.171 XINC 0.001
LOAD GENERATION 1
TYPE 1 565.779 0 564.839 XINC 0.001
TYPE 1 568.424 0 570.224 XINC 0.001
TYPE 1 586.713 0 607.477 XINC 0.001
TYPE 1 589.357 0 612.863 XINC 0.001

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TYPE 2 553.168 0 570.918 XINC 0.001
TYPE 2 555.813 0 576.304 XINC 0.001
TYPE 2 574.104 0 613.56 XINC 0.001
TYPE 2 576.748 0 618.947 XINC 0.001
TYPE 3 540.471 0 576.815 XINC 0.001
TYPE 3 543.116 0 582.203 XINC 0.001
TYPE 3 561.413 0 619.47 XINC 0.001
TYPE 3 564.058 0 624.858 XINC 0.001
LOAD GENERATION 1
TYPE 1 568.47 0 563.512 XINC 0.001
TYPE 1 571.131 0 568.89 XINC 0.001
TYPE 1 589.535 0 606.086 XINC 0.001
TYPE 1 592.196 0 611.464 XINC 0.001
TYPE 2 555.878 0 569.63 XINC 0.001
TYPE 2 558.539 0 575.009 XINC 0.001
TYPE 2 576.945 0 612.208 XINC 0.001
TYPE 2 579.606 0 617.587 XINC 0.001
TYPE 3 543.199 0 575.567 XINC 0.001
TYPE 3 545.861 0 580.947 XINC 0.001
TYPE 3 564.272 0 618.157 XINC 0.001
TYPE 3 566.934 0 623.537 XINC 0.001
LOAD GENERATION 1
TYPE 1 571.157 0 562.178 XINC 0.001
TYPE 1 573.834 0 567.547 XINC 0.001
TYPE 1 592.353 0 604.686 XINC 0.001
TYPE 1 595.031 0 610.056 XINC 0.001
TYPE 2 558.584 0 568.335 XINC 0.001
TYPE 2 561.261 0 573.705 XINC 0.001
TYPE 2 579.782 0 610.847 XINC 0.001
TYPE 2 582.46 0 616.217 XINC 0.001
TYPE 3 545.923 0 574.31 XINC 0.001
TYPE 3 548.602 0 579.682 XINC 0.001
TYPE 3 567.127 0 616.835 XINC 0.001
TYPE 3 569.806 0 622.207 XINC 0.001
LOAD GENERATION 1
TYPE 1 573.84 0 560.835 XINC 0.001
TYPE 1 576.534 0 566.196 XINC 0.001
TYPE 1 595.167 0 603.278 XINC 0.001
TYPE 1 597.861 0 608.639 XINC 0.001
TYPE 2 561.285 0 567.031 XINC 0.001
TYPE 2 563.98 0 572.392 XINC 0.001
TYPE 2 582.615 0 609.478 XINC 0.001
TYPE 2 585.309 0 614.839 XINC 0.001
TYPE 3 548.643 0 573.045 XINC 0.001
TYPE 3 551.338 0 578.408 XINC 0.001
TYPE 3 569.979 0 615.505 XINC 0.001
TYPE 3 572.674 0 620.868 XINC 0.001
LOAD GENERATION 1
TYPE 1 576.518 0 559.484 XINC 0.001
TYPE 1 579.229 0 564.837 XINC 0.001
TYPE 1 597.976 0 601.861 XINC 0.001
TYPE 1 600.687 0 607.214 XINC 0.001
TYPE 2 563.983 0 565.718 XINC 0.001
TYPE 2 566.694 0 571.072 XINC 0.001
TYPE 2 585.443 0 608.099 XINC 0.001
TYPE 2 588.154 0 613.453 XINC 0.001
TYPE 3 551.36 0 571.771 XINC 0.001
TYPE 3 554.071 0 577.127 XINC 0.001
TYPE 3 572.826 0 614.165 XINC 0.001
TYPE 3 575.537 0 619.52 XINC 0.001
LOAD GENERATION 1
TYPE 1 579.193 0 558.124 XINC 0.001
TYPE 1 581.92 0 563.469 XINC 0.001
TYPE 1 600.781 0 600.435 XINC 0.001
TYPE 1 603.508 0 605.78 XINC 0.001
TYPE 2 566.677 0 564.397 XINC 0.001
TYPE 2 569.404 0 569.742 XINC 0.001
TYPE 2 588.267 0 606.712 XINC 0.001
TYPE 2 590.995 0 612.057 XINC 0.001
TYPE 3 554.072 0 570.49 XINC 0.001
TYPE 3 556.8 0 575.836 XINC 0.001
TYPE 3 575.669 0 612.817 XINC 0.001
TYPE 3 578.397 0 618.164 XINC 0.001
LOAD GENERATION 1
TYPE 1 581.863 0 556.757 XINC 0.001
TYPE 1 584.606 0 562.093 XINC 0.001
TYPE 1 603.582 0 599.001 XINC 0.001
TYPE 1 606.325 0 604.337 XINC 0.001
TYPE 2 569.366 0 563.068 XINC 0.001

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TYPE 2 572.11 0 568.405 XINC 0.001
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TYPE 3 556.78 0 569.199 XINC 0.001
TYPE 3 559.525 0 574.538 XINC 0.001
TYPE 3 578.507 0 611.46 XINC 0.001
TYPE 3 581.252 0 616.798 XINC 0.001
LOAD GENERATION 1
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TYPE 1 587.289 0 560.709 XINC 0.001
TYPE 1 606.378 0 597.558 XINC 0.001
TYPE 1 609.138 0 602.885 XINC 0.001
TYPE 2 572.052 0 561.731 XINC 0.001
TYPE 2 574.812 0 567.059 XINC 0.001
TYPE 2 593.903 0 603.912 XINC 0.001
TYPE 2 596.663 0 609.24 XINC 0.001
TYPE 3 559.485 0 567.901 XINC 0.001
TYPE 3 562.246 0 573.231 XINC 0.001
TYPE 3 581.342 0 610.094 XINC 0.001
TYPE 3 584.103 0 615.424 XINC 0.001
LOAD GENERATION 1
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TYPE 1 611.946 0 601.425 XINC 0.001
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TYPE 2 577.51 0 565.705 XINC 0.001
TYPE 2 596.714 0 602.499 XINC 0.001
TYPE 2 599.491 0 607.818 XINC 0.001
TYPE 3 562.185 0 566.594 XINC 0.001
TYPE 3 564.963 0 571.915 XINC 0.001
TYPE 3 584.172 0 608.72 XINC 0.001
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TYPE 1 592.64 0 557.915 XINC 0.001
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TYPE 1 614.749 0 599.956 XINC 0.001
TYPE 2 577.41 0 559.032 XINC 0.001
TYPE 2 580.203 0 564.343 XINC 0.001
TYPE 2 599.521 0 601.077 XINC 0.001
TYPE 2 602.314 0 606.388 XINC 0.001
TYPE 3 564.881 0 565.279 XINC 0.001
TYPE 3 567.675 0 570.591 XINC 0.001
TYPE 3 586.999 0 607.337 XINC 0.001
TYPE 3 589.792 0 612.649 XINC 0.001
LOAD GENERATION 1
TYPE 1 592.501 0 551.204 XINC 0.001
TYPE 1 595.31 0 556.506 XINC 0.001
TYPE 1 614.739 0 593.177 XINC 0.001
TYPE 1 617.548 0 598.479 XINC 0.001
TYPE 2 580.083 0 557.67 XINC 0.001
TYPE 2 582.892 0 562.972 XINC 0.001
TYPE 2 602.324 0 599.646 XINC 0.001
TYPE 2 605.133 0 604.949 XINC 0.001
TYPE 3 567.574 0 563.955 XINC 0.001
TYPE 3 570.384 0 569.259 XINC 0.001
TYPE 3 589.82 0 605.945 XINC 0.001
TYPE 3 592.631 0 611.249 XINC 0.001
LOAD GENERATION 1
TYPE 1 595.15 0 549.796 XINC 0.001
TYPE 1 597.975 0 555.089 XINC 0.001
TYPE 1 617.517 0 591.7 XINC 0.001
TYPE 1 620.343 0 596.993 XINC 0.001
TYPE 2 582.752 0 556.299 XINC 0.001
TYPE 2 585.578 0 561.593 XINC 0.001
TYPE 2 605.122 0 598.207 XINC 0.001
TYPE 2 607.947 0 603.501 XINC 0.001
TYPE 3 570.262 0 562.624 XINC 0.001
TYPE 3 573.088 0 567.919 XINC 0.001
TYPE 3 592.638 0 604.544 XINC 0.001
TYPE 3 595.464 0 609.839 XINC 0.001
LOAD GENERATION 1
TYPE 1 597.794 0 548.379 XINC 0.001
TYPE 1 600.636 0 553.663 XINC 0.001
TYPE 1 620.291 0 590.214 XINC 0.001
TYPE 1 623.132 0 595.498 XINC 0.001
TYPE 2 585.416 0 554.921 XINC 0.001
TYPE 2 588.258 0 560.205 XINC 0.001

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TYPE 2 607.915 0 596.759 XINC 0.001
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TYPE 3 595.451 0 603.135 XINC 0.001
TYPE 3 598.294 0 608.421 XINC 0.001
LOAD GENERATION 1
TYPE 1 600.434 0 546.954 XINC 0.001
TYPE 1 603.292 0 552.23 XINC 0.001
TYPE 1 623.059 0 588.719 XINC 0.001
TYPE 1 625.917 0 593.995 XINC 0.001
TYPE 2 588.077 0 553.534 XINC 0.001
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TYPE 2 610.704 0 595.303 XINC 0.001
TYPE 2 613.563 0 600.579 XINC 0.001
TYPE 3 575.626 0 559.935 XINC 0.001
TYPE 3 578.485 0 565.213 XINC 0.001
TYPE 3 598.26 0 601.717 XINC 0.001
TYPE 3 601.119 0 606.995 XINC 0.001
LOAD GENERATION 1
TYPE 1 603.069 0 545.521 XINC 0.001
TYPE 1 605.944 0 550.788 XINC 0.001
TYPE 1 625.824 0 587.216 XINC 0.001
TYPE 1 628.698 0 592.483 XINC 0.001
TYPE 2 590.733 0 552.139 XINC 0.001
TYPE 2 593.607 0 557.406 XINC 0.001
TYPE 2 613.489 0 593.838 XINC 0.001
TYPE 2 616.364 0 599.105 XINC 0.001
TYPE 3 578.302 0 558.578 XINC 0.001
TYPE 3 581.177 0 563.847 XINC 0.001
TYPE 3 601.065 0 600.29 XINC 0.001
TYPE 3 603.94 0 605.559 XINC 0.001
LOAD GENERATION 1
TYPE 1 605.701 0 544.08 XINC 0.001
TYPE 1 608.591 0 549.338 XINC 0.001
TYPE 1 628.583 0 585.705 XINC 0.001
TYPE 1 631.474 0 590.962 XINC 0.001
TYPE 2 593.384 0 550.736 XINC 0.001
TYPE 2 596.275 0 555.994 XINC 0.001
TYPE 2 616.269 0 592.365 XINC 0.001
TYPE 2 619.16 0 597.623 XINC 0.001
TYPE 3 580.973 0 557.214 XINC 0.001
TYPE 3 583.865 0 562.474 XINC 0.001
TYPE 3 603.865 0 598.855 XINC 0.001
TYPE 3 606.756 0 604.115 XINC 0.001
LOAD GENERATION 1
TYPE 1 608.327 0 542.63 XINC 0.001
TYPE 1 611.234 0 547.879 XINC 0.001
TYPE 1 631.338 0 584.185 XINC 0.001
TYPE 1 634.245 0 589.434 XINC 0.001
TYPE 2 596.031 0 549.324 XINC 0.001
TYPE 2 598.938 0 554.574 XINC 0.001
TYPE 2 619.045 0 590.882 XINC 0.001
TYPE 2 621.952 0 596.132 XINC 0.001
TYPE 3 583.641 0 555.84 XINC 0.001
TYPE 3 586.548 0 561.092 XINC 0.001
TYPE 3 606.66 0 597.411 XINC 0.001
TYPE 3 609.568 0 602.662 XINC 0.001
LOAD GENERATION 1
TYPE 1 610.95 0 541.173 XINC 0.001
TYPE 1 613.872 0 546.413 XINC 0.001
TYPE 1 634.089 0 582.656 XINC 0.001
TYPE 1 637.011 0 587.896 XINC 0.001
TYPE 2 598.674 0 547.905 XINC 0.001
TYPE 2 601.597 0 553.145 XINC 0.001
TYPE 2 621.816 0 589.392 XINC 0.001
TYPE 2 624.739 0 594.632 XINC 0.001
TYPE 3 586.304 0 554.459 XINC 0.001
TYPE 3 589.228 0 559.701 XINC 0.001
TYPE 3 609.451 0 595.959 XINC 0.001
TYPE 3 612.375 0 601.201 XINC 0.001
LOAD GENERATION 1
TYPE 1 613.567 0 539.708 XINC 0.001
TYPE 1 616.506 0 544.939 XINC 0.001
TYPE 1 636.834 0 581.119 XINC 0.001
TYPE 1 639.773 0 586.35 XINC 0.001
TYPE 2 601.313 0 546.477 XINC 0.001
TYPE 2 604.252 0 551.709 XINC 0.001
TYPE 2 624.582 0 587.893 XINC 0.001

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TYPE 2 627.521 0 593.124 XINC 0.001
TYPE 3 588.962 0 553.07 XINC 0.001
TYPE 3 591.903 0 558.303 XINC 0.001
TYPE 3 612.238 0 594.498 XINC 0.001
TYPE 3 615.178 0 599.73 XINC 0.001
LOAD GENERATION 1
TYPE 1 616.181 0 538.234 XINC 0.001
TYPE 1 619.136 0 543.456 XINC 0.001
TYPE 1 639.575 0 579.574 XINC 0.001
TYPE 1 642.53 0 584.795 XINC 0.001
TYPE 2 603.947 0 545.041 XINC 0.001
TYPE 2 606.902 0 550.264 XINC 0.001
TYPE 2 627.344 0 586.385 XINC 0.001
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TYPE 3 591.617 0 551.672 XINC 0.001
TYPE 3 594.573 0 556.896 XINC 0.001
TYPE 3 615.02 0 593.028 XINC 0.001
TYPE 3 617.976 0 598.252 XINC 0.001
LOAD GENERATION 1
TYPE 1 618.789 0 536.753 XINC 0.001
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TYPE 1 645.282 0 583.232 XINC 0.001
TYPE 2 606.577 0 543.598 XINC 0.001
TYPE 2 609.548 0 548.811 XINC 0.001
TYPE 2 630.101 0 584.869 XINC 0.001
TYPE 2 633.072 0 590.082 XINC 0.001
TYPE 3 594.267 0 550.266 XINC 0.001
TYPE 3 597.239 0 555.481 XINC 0.001
TYPE 3 617.798 0 591.55 XINC 0.001
TYPE 3 620.77 0 596.764 XINC 0.001
LOAD GENERATION 1
TYPE 1 621.393 0 535.263 XINC 0.001
TYPE 1 624.38 0 540.466 XINC 0.001
TYPE 1 645.042 0 576.457 XINC 0.001
TYPE 1 648.029 0 581.661 XINC 0.001
TYPE 2 609.202 0 542.146 XINC 0.001
TYPE 2 612.189 0 547.35 XINC 0.001
TYPE 2 632.853 0 583.344 XINC 0.001
TYPE 2 635.841 0 588.548 XINC 0.001
TYPE 3 596.913 0 548.852 XINC 0.001
TYPE 3 599.901 0 554.058 XINC 0.001
TYPE 3 620.571 0 590.063 XINC 0.001
TYPE 3 623.559 0 595.268 XINC 0.001
LOAD GENERATION 1
TYPE 1 623.993 0 533.765 XINC 0.001
TYPE 1 626.996 0 538.96 XINC 0.001
TYPE 1 647.768 0 574.887 XINC 0.001
TYPE 1 650.772 0 580.081 XINC 0.001
TYPE 2 611.823 0 540.685 XINC 0.001
TYPE 2 614.826 0 545.88 XINC 0.001
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TYPE 2 638.604 0 587.006 XINC 0.001
TYPE 3 599.554 0 547.43 XINC 0.001
TYPE 3 602.559 0 552.626 XINC 0.001
TYPE 3 623.339 0 588.568 XINC 0.001
TYPE 3 626.344 0 593.764 XINC 0.001
LOAD GENERATION 1
TYPE 1 626.587 0 532.26 XINC 0.001
TYPE 1 629.607 0 537.445 XINC 0.001
TYPE 1 650.49 0 573.307 XINC 0.001
TYPE 1 653.509 0 578.492 XINC 0.001
TYPE 2 614.439 0 539.217 XINC 0.001
TYPE 2 617.458 0 544.403 XINC 0.001
TYPE 2 638.344 0 580.269 XINC 0.001
TYPE 2 641.363 0 585.455 XINC 0.001
TYPE 3 602.191 0 546 XINC 0.001
TYPE 3 605.212 0 551.187 XINC 0.001
TYPE 3 626.103 0 587.064 XINC 0.001
TYPE 3 629.124 0 592.251 XINC 0.001
LOAD GENERATION 1
TYPE 1 629.178 0 530.746 XINC 0.001
TYPE 1 632.213 0 535.922 XINC 0.001
TYPE 1 653.207 0 571.72 XINC 0.001
TYPE 1 656.242 0 576.896 XINC 0.001
TYPE 2 617.051 0 537.741 XINC 0.001
TYPE 2 620.086 0 542.917 XINC 0.001
TYPE 2 641.082 0 578.719 XINC 0.001
TYPE 2 644.117 0 583.895 XINC 0.001

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TYPE 3 604.824 0 544.561 XINC 0.001
TYPE 3 607.861 0 549.739 XINC 0.001
TYPE 3 628.862 0 585.551 XINC 0.001
TYPE 3 631.899 0 590.729 XINC 0.001
LOAD GENERATION 1
TYPE 1 631.763 0 529.224 XINC 0.001
TYPE 1 634.814 0 534.391 XINC 0.001
TYPE 1 655.918 0 570.124 XINC 0.001
TYPE 1 658.97 0 575.29 XINC 0.001
TYPE 2 619.658 0 536.257 XINC 0.001
TYPE 2 622.709 0 541.424 XINC 0.001
TYPE 2 643.815 0 577.161 XINC 0.001
TYPE 2 646.867 0 582.327 XINC 0.001
TYPE 3 607.452 0 543.114 XINC 0.001
TYPE 3 610.505 0 548.283 XINC 0.001
TYPE 3 631.617 0 584.03 XINC 0.001
TYPE 3 634.669 0 589.199 XINC 0.001
LOAD GENERATION 1
TYPE 1 634.344 0 527.695 XINC 0.001
TYPE 1 637.411 0 532.852 XINC 0.001
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TYPE 1 661.692 0 573.677 XINC 0.001
TYPE 2 622.26 0 534.765 XINC 0.001
TYPE 2 625.328 0 539.922 XINC 0.001
TYPE 2 646.544 0 575.594 XINC 0.001
TYPE 2 649.611 0 580.751 XINC 0.001
TYPE 3 610.076 0 541.66 XINC 0.001
TYPE 3 613.144 0 546.819 XINC 0.001
TYPE 3 634.367 0 582.501 XINC 0.001
TYPE 3 637.435 0 587.66 XINC 0.001
LOAD GENERATION 1
TYPE 1 636.92 0 526.157 XINC 0.001
TYPE 1 640.003 0 531.305 XINC 0.001
TYPE 1 661.327 0 566.907 XINC 0.001
TYPE 1 664.41 0 572.055 XINC 0.001
TYPE 2 624.858 0 533.264 XINC 0.001
TYPE 2 627.941 0 538.412 XINC 0.001
TYPE 2 649.267 0 574.018 XINC 0.001
TYPE 2 652.351 0 579.166 XINC 0.001
TYPE 3 612.695 0 540.197 XINC 0.001
TYPE 3 615.779 0 545.347 XINC 0.001
TYPE 3 637.112 0 580.963 XINC 0.001
TYPE 3 640.196 0 586.112 XINC 0.001
LOAD GENERATION 1
TYPE 1 639.491 0 524.612 XINC 0.001
TYPE 1 642.59 0 529.75 XINC 0.001
TYPE 1 664.024 0 565.286 XINC 0.001
TYPE 1 667.123 0 570.424 XINC 0.001
TYPE 2 627.451 0 531.756 XINC 0.001
TYPE 2 630.55 0 536.894 XINC 0.001
TYPE 2 651.986 0 572.434 XINC 0.001
TYPE 2 655.085 0 577.573 XINC 0.001
TYPE 3 615.31 0 538.726 XINC 0.001
TYPE 3 618.41 0 543.866 XINC 0.001
TYPE 3 639.852 0 579.417 XINC 0.001
TYPE 3 642.952 0 584.557 XINC 0.001
LOAD GENERATION 1
TYPE 1 642.058 0 523.058 XINC 0.001
TYPE 1 645.172 0 528.187 XINC 0.001
TYPE 1 666.716 0 563.657 XINC 0.001
TYPE 1 669.83 0 568.785 XINC 0.001
TYPE 2 630.04 0 530.24 XINC 0.001
TYPE 2 633.155 0 535.369 XINC 0.001
TYPE 2 654.7 0 570.842 XINC 0.001
TYPE 2 657.815 0 575.971 XINC 0.001
TYPE 3 617.92 0 537.247 XINC 0.001
TYPE 3 621.036 0 542.378 XINC 0.001
TYPE 3 642.587 0 577.862 XINC 0.001
TYPE 3 645.703 0 582.992 XINC 0.001
LOAD GENERATION 1
TYPE 1 644.619 0 521.497 XINC 0.001
TYPE 1 647.75 0 526.616 XINC 0.001
TYPE 1 669.402 0 562.019 XINC 0.001
TYPE 1 672.533 0 567.138 XINC 0.001
TYPE 2 632.624 0 528.715 XINC 0.001
TYPE 2 635.755 0 533.835 XINC 0.001
TYPE 2 657.409 0 569.242 XINC 0.001
TYPE 2 660.54 0 574.361 XINC 0.001
TYPE 3 620.526 0 535.76 XINC 0.001

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TYPE 3 623.657 0 540.881 XINC 0.001
TYPE 3 645.318 0 576.299 XINC 0.001
TYPE 3 648.45 0 581.419 XINC 0.001
LOAD GENERATION 1
TYPE 1 647.176 0 519.928 XINC 0.001
TYPE 1 650.323 0 525.037 XINC 0.001
TYPE 1 672.084 0 560.374 XINC 0.001
TYPE 1 675.23 0 565.483 XINC 0.001
TYPE 2 635.203 0 527.183 XINC 0.001
TYPE 2 638.35 0 532.293 XINC 0.001
TYPE 2 660.113 0 567.633 XINC 0.001
TYPE 2 663.26 0 572.742 XINC 0.001
TYPE 3 623.127 0 534.265 XINC 0.001
TYPE 3 626.274 0 539.376 XINC 0.001
TYPE 3 648.044 0 574.727 XINC 0.001
TYPE 3 651.191 0 579.838 XINC 0.001
LOAD GENERATION 1
TYPE 1 649.728 0 518.351 XINC 0.001
TYPE 1 652.89 0 523.45 XINC 0.001
TYPE 1 674.761 0 558.72 XINC 0.001
TYPE 1 677.923 0 563.819 XINC 0.001
TYPE 2 637.777 0 525.643 XINC 0.001
TYPE 2 640.94 0 530.743 XINC 0.001
TYPE 2 662.812 0 566.016 XINC 0.001
TYPE 2 665.975 0 571.115 XINC 0.001
TYPE 3 625.723 0 532.762 XINC 0.001
TYPE 3 628.886 0 537.864 XINC 0.001
TYPE 3 650.765 0 573.147 XINC 0.001
TYPE 3 653.928 0 578.248 XINC 0.001
LOAD GENERATION 1
TYPE 1 652.275 0 516.766 XINC 0.001
TYPE 1 655.453 0 521.855 XINC 0.001
TYPE 1 677.432 0 557.057 XINC 0.001
TYPE 1 680.61 0 562.147 XINC 0.001
TYPE 2 640.347 0 524.095 XINC 0.001
TYPE 2 643.525 0 529.185 XINC 0.001
TYPE 2 665.506 0 564.39 XINC 0.001
TYPE 2 668.684 0 569.48 XINC 0.001
TYPE 3 628.315 0 531.252 XINC 0.001
TYPE 3 631.494 0 536.343 XINC 0.001
TYPE 3 653.481 0 571.559 XINC 0.001
TYPE 3 656.66 0 576.65 XINC 0.001
LOAD GENERATION 1
TYPE 1 654.818 0 515.173 XINC 0.001
TYPE 1 658.011 0 520.253 XINC 0.001
TYPE 1 680.099 0 555.387 XINC 0.001
TYPE 1 683.292 0 560.466 XINC 0.001
TYPE 2 642.912 0 522.539 XINC 0.001
TYPE 2 646.106 0 527.619 XINC 0.001
TYPE 2 668.195 0 562.756 XINC 0.001
TYPE 2 671.389 0 567.837 XINC 0.001
TYPE 3 630.902 0 529.733 XINC 0.001
TYPE 3 634.096 0 534.814 XINC 0.001
TYPE 3 656.192 0 569.962 XINC 0.001
TYPE 3 659.387 0 575.044 XINC 0.001
LOAD GENERATION 1
TYPE 1 657.355 0 513.573 XINC 0.001
TYPE 1 660.564 0 518.642 XINC 0.001
TYPE 1 682.76 0 553.708 XINC 0.001
TYPE 1 685.969 0 558.778 XINC 0.001
TYPE 2 645.472 0 520.975 XINC 0.001
TYPE 2 648.682 0 526.045 XINC 0.001
TYPE 2 670.88 0 561.114 XINC 0.001
TYPE 2 674.089 0 566.185 XINC 0.001
TYPE 3 633.484 0 528.206 XINC 0.001
TYPE 3 636.694 0 533.277 XINC 0.001
TYPE 3 658.899 0 568.357 XINC 0.001
TYPE 3 662.109 0 573.429 XINC 0.001
LOAD GENERATION 1
TYPE 1 659.887 0 511.964 XINC 0.001
TYPE 1 663.112 0 517.024 XINC 0.001
TYPE 1 685.416 0 552.021 XINC 0.001
TYPE 1 688.64 0 557.081 XINC 0.001
TYPE 2 648.027 0 519.403 XINC 0.001
TYPE 2 651.252 0 524.464 XINC 0.001
TYPE 2 673.558 0 559.464 XINC 0.001
TYPE 2 676.783 0 564.524 XINC 0.001
TYPE 3 636.062 0 526.671 XINC 0.001
TYPE 3 639.288 0 531.733 XINC 0.001

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TYPE 3 661.6 0 566.744 XINC 0.001
TYPE 3 664.826 0 571.805 XINC 0.001
LOAD GENERATION 1
TYPE 1 662.415 0 510.348 XINC 0.001
TYPE 1 665.655 0 515.398 XINC 0.001
TYPE 1 688.067 0 550.326 XINC 0.001
TYPE 1 691.307 0 555.376 XINC 0.001
TYPE 2 650.578 0 517.824 XINC 0.001
TYPE 2 653.818 0 522.874 XINC 0.001
TYPE 2 676.232 0 557.805 XINC 0.001
TYPE 2 679.473 0 562.856 XINC 0.001
TYPE 3 638.635 0 525.128 XINC 0.001
TYPE 3 641.876 0 530.18 XINC 0.001
TYPE 3 664.296 0 565.122 XINC 0.001
TYPE 3 667.538 0 570.174 XINC 0.001
LOAD GENERATION 1
TYPE 1 664.937 0 508.724 XINC 0.001
TYPE 1 668.193 0 513.764 XINC 0.001
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TYPE 1 693.968 0 553.662 XINC 0.001
TYPE 2 653.123 0 516.236 XINC 0.001
TYPE 2 656.38 0 521.276 XINC 0.001
TYPE 2 678.901 0 556.139 XINC 0.001
TYPE 2 682.157 0 561.179 XINC 0.001
TYPE 3 641.203 0 523.577 XINC 0.001
TYPE 3 644.46 0 528.619 XINC 0.001
TYPE 3 666.988 0 563.492 XINC 0.001
TYPE 3 670.245 0 568.533 XINC 0.001
LOAD GENERATION 1
TYPE 1 667.455 0 507.092 XINC 0.001
TYPE 1 670.726 0 512.122 XINC 0.001
TYPE 1 693.353 0 546.911 XINC 0.001
TYPE 1 696.624 0 551.941 XINC 0.001
TYPE 2 655.664 0 514.641 XINC 0.001
TYPE 2 658.936 0 519.671 XINC 0.001
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TYPE 2 684.836 0 559.494 XINC 0.001
TYPE 3 643.766 0 522.018 XINC 0.001
TYPE 3 647.039 0 527.05 XINC 0.001
TYPE 3 669.674 0 561.853 XINC 0.001
TYPE 3 672.946 0 566.885 XINC 0.001
LOAD GENERATION 1
TYPE 1 669.967 0 505.453 XINC 0.001
TYPE 1 673.254 0 510.472 XINC 0.001
TYPE 1 695.988 0 545.192 XINC 0.001
TYPE 1 699.274 0 550.211 XINC 0.001
TYPE 2 658.2 0 513.037 XINC 0.001
TYPE 2 661.487 0 518.058 XINC 0.001
TYPE 2 684.223 0 552.78 XINC 0.001
TYPE 2 687.51 0 557.8 XINC 0.001
TYPE 3 646.325 0 520.452 XINC 0.001
TYPE 3 649.613 0 525.474 XINC 0.001
TYPE 3 672.355 0 560.207 XINC 0.001
TYPE 3 675.643 0 565.228 XINC 0.001
LOAD GENERATION 1
TYPE 1 672.474 0 503.805 XINC 0.001
TYPE 1 675.777 0 508.815 XINC 0.001
TYPE 1 698.617 0 543.464 XINC 0.001
TYPE 1 701.92 0 548.473 XINC 0.001
TYPE 2 660.73 0 511.426 XINC 0.001
TYPE 2 664.033 0 516.436 XINC 0.001
TYPE 2 686.876 0 551.089 XINC 0.001
TYPE 2 690.179 0 556.099 XINC 0.001
TYPE 3 648.878 0 518.878 XINC 0.001
TYPE 3 652.182 0 523.889 XINC 0.001
TYPE 3 675.031 0 558.552 XINC 0.001
TYPE 3 678.335 0 563.563 XINC 0.001
LOAD GENERATION 1
TYPE 1 674.976 0 502.15 XINC 0.001
TYPE 1 678.294 0 507.15 XINC 0.001
TYPE 1 701.242 0 541.728 XINC 0.001
TYPE 1 704.559 0 546.727 XINC 0.001
TYPE 2 663.256 0 509.808 XINC 0.001
TYPE 2 666.574 0 514.807 XINC 0.001
TYPE 2 689.524 0 549.389 XINC 0.001
TYPE 2 692.842 0 554.389 XINC 0.001
TYPE 3 651.427 0 517.295 XINC 0.001
TYPE 3 654.746 0 522.297 XINC 0.001
TYPE 3 677.702 0 556.889 XINC 0.001

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TYPE 3 681.021 0 561.89 XINC 0.001
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TYPE 1 680.807 0 505.477 XINC 0.001
TYPE 1 703.861 0 539.984 XINC 0.001
TYPE 1 707.194 0 544.973 XINC 0.001
TYPE 2 665.777 0 508.181 XINC 0.001
TYPE 2 669.11 0 513.17 XINC 0.001
TYPE 2 692.167 0 547.681 XINC 0.001
TYPE 2 695.5 0 552.671 XINC 0.001
TYPE 3 653.971 0 515.705 XINC 0.001
TYPE 3 657.305 0 520.696 XINC 0.001
TYPE 3 680.368 0 555.217 XINC 0.001
TYPE 3 683.702 0 560.208 XINC 0.001
LOAD GENERATION 1
TYPE 1 679.965 0 498.817 XINC 0.001
TYPE 1 683.314 0 503.796 XINC 0.001
TYPE 1 706.474 0 538.232 XINC 0.001
TYPE 1 709.823 0 543.211 XINC 0.001
TYPE 2 668.293 0 506.547 XINC 0.001
TYPE 2 671.641 0 511.526 XINC 0.001
TYPE 2 694.804 0 545.965 XINC 0.001
TYPE 2 698.153 0 550.945 XINC 0.001
TYPE 3 656.51 0 514.107 XINC 0.001
TYPE 3 659.86 0 519.088 XINC 0.001
TYPE 3 683.029 0 553.538 XINC 0.001
TYPE 3 686.378 0 558.518 XINC 0.001
LOAD GENERATION 1
TYPE 1 682.452 0 497.139 XINC 0.001
TYPE 1 685.816 0 502.108 XINC 0.001
TYPE 1 709.082 0 536.472 XINC 0.001
TYPE 1 712.446 0 541.441 XINC 0.001
TYPE 2 670.803 0 504.904 XINC 0.001
TYPE 2 674.167 0 509.873 XINC 0.001
TYPE 2 697.436 0 544.241 XINC 0.001
TYPE 2 700.8 0 549.21 XINC 0.001
TYPE 3 659.044 0 512.501 XINC 0.001
TYPE 3 662.409 0 517.472 XINC 0.001
TYPE 3 685.684 0 551.85 XINC 0.001
TYPE 3 689.049 0 556.82 XINC 0.001
LOAD GENERATION 1
TYPE 1 684.934 0 495.454 XINC 0.001
TYPE 1 688.313 0 500.411 XINC 0.001
TYPE 1 711.685 0 534.704 XINC 0.001
TYPE 1 715.064 0 539.662 XINC 0.001
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TYPE 3 664.953 0 515.848 XINC 0.001
TYPE 3 688.335 0 550.154 XINC 0.001
TYPE 3 691.715 0 555.114 XINC 0.001
LOAD GENERATION 1
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TYPE 1 714.283 0 532.928 XINC 0.001
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TYPE 2 679.204 0 506.545 XINC 0.001
TYPE 2 702.684 0 540.769 XINC 0.001
TYPE 2 706.079 0 545.717 XINC 0.001
TYPE 3 664.097 0 509.266 XINC 0.001
TYPE 3 667.493 0 514.216 XINC 0.001
TYPE 3 690.98 0 548.45 XINC 0.001
TYPE 3 694.375 0 553.399 XINC 0.001
LOAD GENERATION 1
TYPE 1 689.881 0 492.059 XINC 0.001
TYPE 1 693.291 0 496.996 XINC 0.001
TYPE 1 716.874 0 531.144 XINC 0.001
TYPE 1 720.284 0 536.081 XINC 0.001
TYPE 2 678.305 0 499.932 XINC 0.001
TYPE 2 681.715 0 504.869 XINC 0.001
TYPE 2 705.3 0 539.021 XINC 0.001
TYPE 2 708.71 0 543.958 XINC 0.001
TYPE 3 666.616 0 507.637 XINC 0.001
TYPE 3 670.027 0 512.576 XINC 0.001
TYPE 3 693.619 0 546.738 XINC 0.001
TYPE 3 697.03 0 551.677 XINC 0.001

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TYPE 1 692.347 0 490.351 XINC 0.001
TYPE 1 695.772 0 495.277 XINC 0.001
TYPE 1 719.461 0 529.352 XINC 0.001
TYPE 1 722.885 0 534.279 XINC 0.001
TYPE 2 680.795 0 498.259 XINC 0.001
TYPE 2 684.22 0 503.186 XINC 0.001
TYPE 2 707.911 0 537.264 XINC 0.001
TYPE 2 711.336 0 542.191 XINC 0.001
TYPE 3 669.13 0 506 XINC 0.001
TYPE 3 672.556 0 510.929 XINC 0.001
TYPE 3 696.254 0 545.017 XINC 0.001
TYPE 3 699.68 0 549.946 XINC 0.001
LOAD GENERATION 1
TYPE 1 694.808 0 488.634 XINC 0.001
TYPE 1 698.248 0 493.55 XINC 0.001
TYPE 1 722.041 0 527.552 XINC 0.001
TYPE 1 725.481 0 532.468 XINC 0.001
TYPE 2 683.28 0 496.578 XINC 0.001
TYPE 2 686.72 0 501.495 XINC 0.001
TYPE 2 710.516 0 535.5 XINC 0.001
TYPE 2 713.956 0 540.416 XINC 0.001
TYPE 3 671.639 0 504.355 XINC 0.001
TYPE 3 675.08 0 509.273 XINC 0.001
TYPE 3 698.883 0 543.289 XINC 0.001
TYPE 3 702.324 0 548.206 XINC 0.001
LOAD GENERATION 1
TYPE 1 697.263 0 486.91 XINC 0.001
TYPE 1 700.718 0 491.816 XINC 0.001
TYPE 1 724.617 0 525.744 XINC 0.001
TYPE 1 728.072 0 530.649 XINC 0.001
TYPE 2 685.76 0 494.89 XINC 0.001
TYPE 2 689.215 0 499.796 XINC 0.001
TYPE 2 713.116 0 533.727 XINC 0.001
TYPE 2 716.571 0 538.633 XINC 0.001
TYPE 3 674.143 0 502.703 XINC 0.001
TYPE 3 677.6 0 507.61 XINC 0.001
TYPE 3 701.507 0 541.552 XINC 0.001
TYPE 3 704.963 0 546.459 XINC 0.001
LOAD GENERATION 1
TYPE 1 699.713 0 485.179 XINC 0.001
TYPE 1 703.183 0 490.074 XINC 0.001
TYPE 1 727.186 0 523.928 XINC 0.001
TYPE 1 730.656 0 528.823 XINC 0.001
TYPE 2 688.235 0 493.194 XINC 0.001
TYPE 2 691.705 0 498.089 XINC 0.001
TYPE 2 715.71 0 531.947 XINC 0.001
TYPE 2 719.181 0 536.842 XINC 0.001
TYPE 3 676.642 0 501.043 XINC 0.001
TYPE 3 680.113 0 505.939 XINC 0.001
TYPE 3 704.125 0 539.807 XINC 0.001
TYPE 3 707.597 0 544.704 XINC 0.001
LOAD GENERATION 1
TYPE 1 702.158 0 483.44 XINC 0.001
TYPE 1 705.643 0 488.324 XINC 0.001
TYPE 1 729.75 0 522.104 XINC 0.001
TYPE 1 733.236 0 526.988 XINC 0.001
TYPE 2 690.704 0 491.49 XINC 0.001
TYPE 2 694.19 0 496.375 XINC 0.001
TYPE 2 718.299 0 530.158 XINC 0.001
TYPE 2 721.785 0 535.043 XINC 0.001
TYPE 3 679.135 0 499.375 XINC 0.001
TYPE 3 682.622 0 504.261 XINC 0.001
TYPE 3 706.738 0 538.055 XINC 0.001
TYPE 3 710.225 0 542.94 XINC 0.001
LOAD GENERATION 1
TYPE 1 704.597 0 481.694 XINC 0.001
TYPE 1 708.097 0 486.567 XINC 0.001
TYPE 1 732.308 0 520.273 XINC 0.001
TYPE 1 735.809 0 525.146 XINC 0.001
TYPE 2 693.168 0 489.779 XINC 0.001
TYPE 2 696.669 0 494.653 XINC 0.001
TYPE 2 720.882 0 528.362 XINC 0.001
TYPE 2 724.383 0 533.236 XINC 0.001
TYPE 3 681.624 0 497.699 XINC 0.001
TYPE 3 685.126 0 502.575 XINC 0.001
TYPE 3 709.346 0 536.294 XINC 0.001
TYPE 3 712.848 0 541.169 XINC 0.001
LOAD GENERATION 1
```

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TYPE 1 707.031 0 479.94 XINC 0.001
TYPE 1 710.546 0 484.802 XINC 0.001
TYPE 1 734.861 0 518.433 XINC 0.001
TYPE 1 738.377 0 523.295 XINC 0.001
TYPE 2 695.627 0 488.061 XINC 0.001
TYPE 2 699.143 0 492.923 XINC 0.001
TYPE 2 723.46 0 526.558 XINC 0.001
TYPE 2 726.976 0 531.42 XINC 0.001
TYPE 3 684.107 0 496.016 XINC 0.001
TYPE 3 687.624 0 500.881 XINC 0.001
TYPE 3 711.948 0 534.525 XINC 0.001
TYPE 3 715.465 0 539.389 XINC 0.001
LOAD GENERATION 1
TYPE 1 709.459 0 478.178 XINC 0.001
TYPE 1 712.99 0 483.03 XINC 0.001
TYPE 1 737.408 0 516.586 XINC 0.001
TYPE 1 740.939 0 521.437 XINC 0.001
TYPE 2 698.08 0 486.334 XINC 0.001
TYPE 2 701.611 0 491.186 XINC 0.001
TYPE 2 726.032 0 524.745 XINC 0.001
TYPE 2 729.563 0 529.597 XINC 0.001
TYPE 3 686.585 0 494.325 XINC 0.001
TYPE 3 690.117 0 499.179 XINC 0.001
TYPE 3 714.545 0 532.748 XINC 0.001
TYPE 3 718.077 0 537.601 XINC 0.001
LOAD GENERATION 1
TYPE 1 711.882 0 476.41 XINC 0.001
TYPE 1 715.428 0 481.25 XINC 0.001
TYPE 1 739.949 0 514.73 XINC 0.001
TYPE 1 743.495 0 519.571 XINC 0.001
TYPE 2 700.529 0 484.6 XINC 0.001
TYPE 2 704.074 0 489.441 XINC 0.001
TYPE 2 728.598 0 522.925 XINC 0.001
TYPE 2 732.144 0 527.766 XINC 0.001
TYPE 3 689.058 0 492.627 XINC 0.001
TYPE 3 692.605 0 497.47 XINC 0.001
TYPE 3 717.136 0 530.963 XINC 0.001
TYPE 3 720.683 0 535.806 XINC 0.001
LOAD GENERATION 1
TYPE 1 714.3 0 474.633 XINC 0.001
TYPE 1 717.86 0 479.463 XINC 0.001
TYPE 1 742.485 0 512.867 XINC 0.001
TYPE 1 746.045 0 517.697 XINC 0.001
TYPE 2 702.972 0 482.859 XINC 0.001
TYPE 2 706.532 0 487.689 XINC 0.001
TYPE 2 731.159 0 521.097 XINC 0.001
TYPE 2 734.72 0 525.927 XINC 0.001
TYPE 3 691.526 0 490.921 XINC 0.001
TYPE 3 695.088 0 495.753 XINC 0.001
TYPE 3 719.722 0 529.17 XINC 0.001
TYPE 3 723.283 0 534.002 XINC 0.001
PERFORM ANALYSIS
FINISH
```