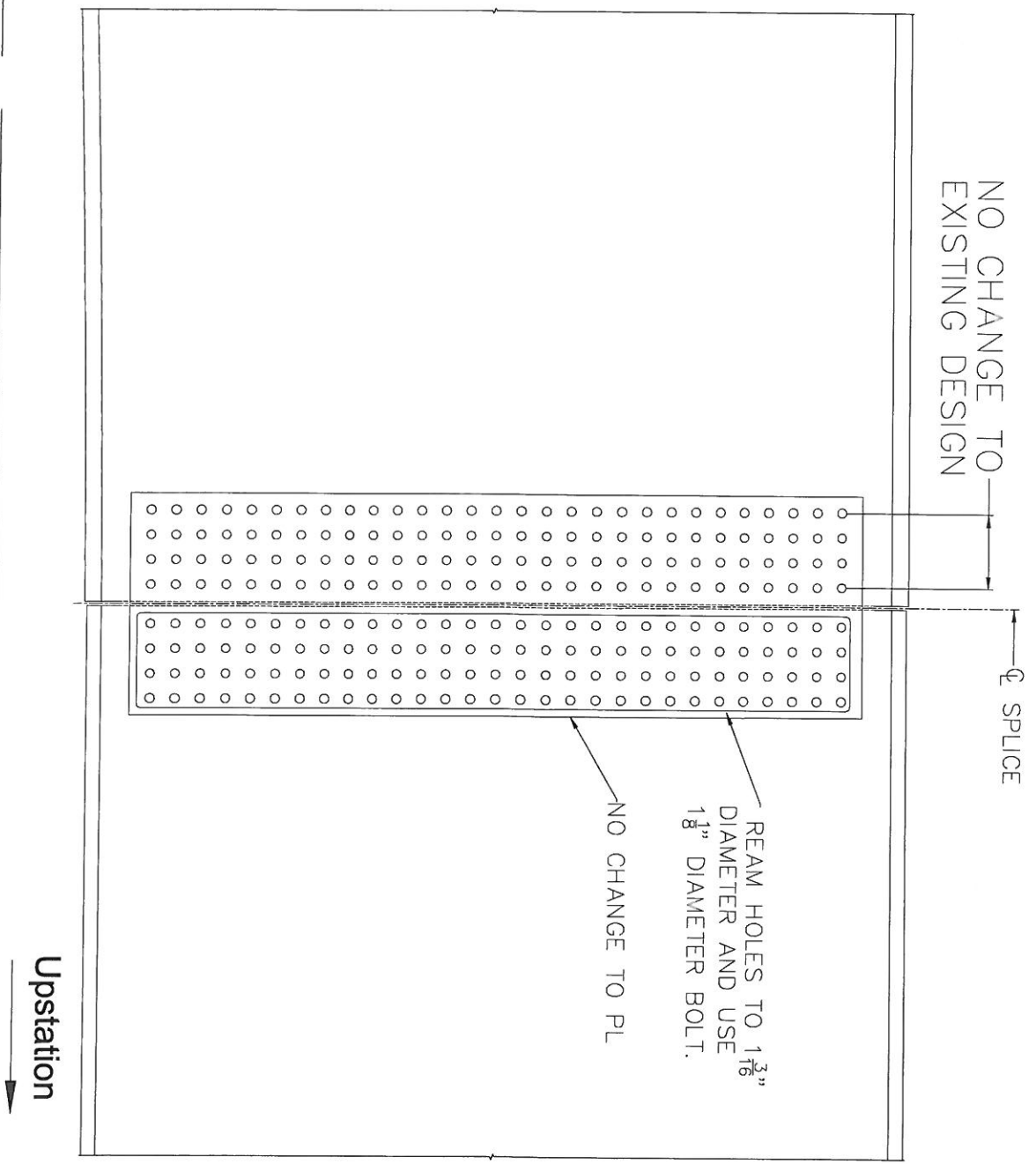


# RFI 472

## Girder 2, FS 1

SJL 9-4-13  
 HRH 9-6-13  
 SJL 9-6-13



- NOTES:
1. FLANGE SPLICE NOT SHOWN FOR CLARITY.
  2. ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE RFC PLANS.
  3. THE CENTER OF REAMED HOLES SHALL BE CONCENTRIC WITH CENTER OF EXISTING HOLES.
  4. BOLTS SHALL BE HIGH STRENGTH A325 GALVANIZED TYPE I BOLTS.
  5. FINAL REAMED HOLES THROUGH SPLICE PLATES & WEB SHALL BE CIRCULAR AND CONCENTRIC.

Upstation  
 ←

RFI 472

- Girder 2, FS 1 web splice has holes that conflict and need to be reamed to achieve fit-up in the field.
- Walsh proposes to ream the conflicting holes to a  $1\frac{3}{16}$ "  $\emptyset$  hole and use a  $1\frac{1}{8}$ "  $\emptyset$  bolt.
- Calculations were performed to check the splice. Included in the calculation was the check for Bolt Bearing (AASHTO 6.13.2.9) with the reduced distance between holes and end distance taken into account. Girder 2, FS 1 was found to be OK for design checks.
- Reaming the conflicting holes to a  $1\frac{3}{16}$ "  $\emptyset$  hole and using a  $1\frac{1}{8}$ "  $\emptyset$  bolt will violate the AASHTO minimum bolt spacing. This issue was discussed at the 4-19-13 meeting between ODOT, HDR, Walsh + HNTB.



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For **Cleveland InnerBelt : Field Splice - Node 3007**

\\kcow00\Jobs\49633\Bridges\Design\Final Design\Unit 2\INDC65\_MODEL\RFIs\Field Splice\_2013-09-04.xlsm>Type A

Revised	DJG	Date	10	.2
Checked	SJL	Date	10/11/2012	
Backchk'd	DJG	Date	10/11/2011	

Job Number	49633
Made	SAE
Checked	WME
Backchk'd	SAE
Date	8/5/2011
Date	8/5/2011
Date	8/5/2011

**Field Splice - Node 3007**

For RFI 472

Updated	SJL	Date	9/4/2013
Checked	HRH	Date	9/6/2013
Backchk'd	SJL	Date	9/6/2013

Node 3007

**Resistance Factors (6.5.4.2)**

$\phi_f$	1.00
$\phi_v$	1.00
$\phi_c$	0.90
$\phi_u$	0.80
$\phi_y$	0.95
$\phi_{bb}$	0.80
$\phi_s$	0.80
$\phi_{bs}$	0.80
$\phi_{vu}$	0.80

**A325 Bolt**

Dia. (in)	1.0
A (in <sup>2</sup> )	0.79
Fub (ksi)	120
Hole (in)	1.1875 (6.13.2.4.2-1)

Note: Conservatively checked using 1" dia. bolt for all bolts.

**No. Bolt**

TF	108
Web	116
BF	154

Note: The hole diameter used here is 1.1875". Changing the hole diameter here changes the hole diameter for all web and flange holes in the splice within this spreadsheet. Since only web holes will be reamed to 1.1875" diameter, flange design checks will not be evaluated and are shown hatched-out in this spreadsheet.

Note: For RFI 472, the web splice and pertinent web splice input was updated and verified. Flange splices were not re-evaluated.

**Determine Controlling Section**

Section	Top Flange			Bottom Flange			Web		
	Area	$\phi_f$ Fnc	A*Fnc	Area	$\phi_f$ Fnc	A*Fnc	Area	Fyw	A*Fyw
3007 L	94.50	69.04	6524.43	144.00	69.04	9941.99	96.00	50.00	4800.00
3007 R	94.50	69.04	6524.43	144.00	69.04	9941.99	96.00	50.00	4800.00

Controlling Section = 3007 L

Rh = 0.99

**Section and Material Properties**

Girder Section	b (in)	t (in)	L (in)	Ag (in <sup>2</sup> )	An (in <sup>2</sup> )	Ae (in <sup>2</sup> )	Fu (ksi)	
							Fy (ksi)	Fu (ksi)
TF	42.00	2.25	---	94.50	62.44	63.85	70	85
	96.00	1.00	---	96.00	61.56	---	50	65
	48.00	3.00	---	144.00	94.13	66.26	70	85
Splice Plates	42.00	1.125	56.50	47.25	31.22	---	70	85
	19.50	1.250	56.50	48.75	30.84	---	70	85
	22.50	1.500	68.50	67.50	42.66	---	70	85
	48.00	1.375	68.50	66.00	43.14	---	70	85
Web	89.00	0.750	26.50	133.50	81.84	---	50	65



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Made SAE L  
Checked WME Date  
Backchkd SAE Date

Job Number 49633  
Revised DJG Date  
Checked SJL Date  
Backchkd DJG Date

10 i:2  
10/11/2012  
10/11/2011

For Cleveland InnerBelt : Field Splice - Node 3007

Flange Design Forces Strength I-V (6.13.6.1.4c)

	MAX FX		MIN FX		MAX FY		MIN FY		MAX MY		MIN MY		MAX MZ		MIN MZ	
	TF	BF	TF	BF	TF	BF	TF	BF	TF	BF	TF	BF	TF	BF	TF	BF
f (ksi)	-37.97	30.71	-45.80	43.52	-37.99	30.54	-46.73	45.26	-39.29	32.36	-39.55	32.94	-47.97	47.59	-35.69	26.45
φf Fnc (ksi)	59.04	59.04	59.04	59.04	59.04	59.04	59.04	59.04	59.04	59.04	59.04	59.04	59.04	59.04	59.04	59.04
f / φf Fnc	0.55	0.44	0.66	0.63	0.55	0.44	0.68	0.65	0.57	0.47	0.57	0.48	0.69	0.69	0.52	0.38
α	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
fcf (ksi)	-37.97		-45.80		-37.99		-46.73		-39.29		-39.55		-47.97		-35.69	
Fcf (ksi)	-53.77		-57.74		-53.78		-58.21		-54.44		-54.62		-58.84		-52.61	
Fcf (kip)	-5081.34		-5456.27		-6082.03		-5500.72		-5144.54		-5161.52		-5550.28		-4971.96	
fncf (ksi)	30.71		43.52		30.54		45.26		32.36		32.94		47.59		26.45	
Rcf	1.42		1.25		1.42		1.25		1.39		1.38		1.23		1.47	
Fncf (ksi)	51.78		55.62		51.78		57.16		51.78		51.78		58.19		51.78	
Fncf (kip)	4983.84		5353.75		4983.84		5501.62		4983.84		4983.84		5686.56		4983.84	

Flange Design Forces - Service II (6.13.6.1.4c)

	MAX FX		MIN FX		MAX FY		MIN FY		MAX MY		MIN MY		MAX MZ		MIN MZ	
	TF	BF	TF	BF	TF	BF	TF	BF	TF	BF	TF	BF	TF	BF	TF	BF
f (ksi)	-28.20	22.56	-33.75	31.52	-28.21	22.54	-34.41	32.75	-27.75	21.36	-33.35	31.13	-35.26	34.59	-26.61	19.45
Fs (ksi)	-28.20	22.56	-33.75	31.52	-28.21	22.54	-34.41	32.75	-27.75	21.36	-33.35	31.13	-35.26	34.59	-26.61	19.45
Fs (kip)	-2664.63	3263.51	-3199.35	4539.52	-2665.81	3246.40	-3251.39	4715.47	-2622.34	3075.73	-3151.24	4482.01	-3332.35	4981.39	-2514.37	2802.81

Max Flange Design Forces

	Strength I		Service II	
	TF	BF	TF	BF
Pu	0.00	5696.56	0.00	4981.39
Tension Comp	5680.28	0.00	3332.35	0.00

φvVn (kip) = 1375.39  
e<sub>v</sub> (in) = 6.75

Web Design Forces (6.13.6.1.4b)

	Service II															
	MAX FX		MIN FX		MAX FY		MIN FY		MAX MY		MIN MY		MAX MZ		MIN MZ	
	TF	BF	TF	BF	TF	BF	TF	BF	TF	BF	TF	BF	TF	BF	TF	BF
	Vu (kip)	68.40	166.60	51.70	336.65	107.37	103.85	248.51	20.26	50.25	122.07	122.07	122.07	41.55	160.14	177.50
Vuw (kip)	102.60	249.90	77.54	504.97	161.06	155.77	372.76	30.39	---	---	---	---	---	---	---	---
Mv (k*ft)	57.71	140.57	43.62	284.04	90.59	87.62	209.68	17.09	28.26	68.66	68.66	68.66	23.37	90.08	99.84	10.51
Huw (kip)	-458.21	-100.07	-470.75	-49.61	-425.02	-407.42	16.44	-619.36	-265.62	-106.81	-106.81	-106.81	-306.74	-106.63	-32.16	-342.87
Muw (k*ft)	6177.48	7155.88	6161.67	7282.55	6306.17	6352.31	7450.19	5816.49	3255.06	4177.54	4177.54	4177.54	3142.97	4126.18	4470.78	2948.54
Mlu (k*ft)	6235.19	7296.45	6205.29	7566.60	6396.76	6439.93	7659.87	5833.58	3283.33	4246.21	4246.21	4246.21	3166.34	4216.25	4570.62	2959.05

Note: Mu = Muw + Mv





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Made	SAE	L
Checked	WME	Date
Backchk'd	SAE	Date

Job Number	49633
Revised	DJG
Checked	SJL
Backchk'd	DJG

Date	10/11/2012
Date	10/11/2011
Date	10/11/2011

For **Cleveland InnerBelt : Field Splice - Node 3007**

**Web Bolt Force**

	Strength I						Service II							
	MAX FX	MIN FX	MAX FY	MIN FY	MAX MY	MIN MZ	MAX FX	MIN FX	MAX FY	MIN FY	MAX MY	MIN MY	MAX MZ	MIN MZ
PX1 (Huw)	3.95	0.86	4.06	0.43	3.66	5.34	2.29	0.92	2.34	0.68	2.64	0.92	0.28	2.96
PY1 (Vuw)	0.88	2.15	0.67	4.35	1.39	0.26	0.43	1.05	0.30	2.09	0.36	1.38	1.53	0.16
PX2 (Mu)	42.25	49.44	42.04	51.27	43.34	39.53	22.25	28.77	22.14	30.05	21.45	28.57	30.97	20.05
PY2 (Mu)	4.53	5.30	4.50	5.49	4.64	4.23	2.38	3.08	2.37	3.22	2.30	3.06	3.32	2.15
Pu (kip)	46.51	50.85	46.39	52.62	47.39	45.09	24.70	29.98	24.63	31.18	24.24	29.82	31.62	23.12

Note: Pu =  $\sqrt{((PX1 + PX2)^2 + (PY1 + PY2)^2)}$

**Splice Plate Design**

**Flange Splice Plates in Tension (6.13.5.2)**

	Pu (kip)	Pry (kip)	Pru (kip)	Avg (in2)	Avn (in2)	Atn (in2)	Plbs (kip)	Rr (kip)	Check
TF Outside	0.00	3142.13	2122.88	58.50	35.79	26.93	3242.74	2122.88	OK
TF Inside	0.00	3241.88	2103.75	130.00	79.53	22.65	4577.34	2103.75	OK
BF Inside	2880.28	4488.75	2894.25	192.00	117.19	32.53	6840.38	2894.25	OK
BF Outside	2816.28	4389.00	2933.55	88.00	53.71	37.90	4595.45	2933.55	OK

**Tension Plate Parameters**

U	1.0
Rp	1.0
Ubs	1.0

**Flange Splice Plates in Compression (6.13.6.1.4c)**

	Pu (kip)	Rr (kip)	Check
TF Outside	2736.70	2976.75	OK
TF Inside	2823.58	3071.25	OK
BF Inside	0.00	4252.50	OK
BF Outside	0.00	4158.00	OK

**Web Splice Plates in Axial Flexure (6.13.6.1.4b)**

	MAX FX	MIN FX	MAX FY	MIN FY	MAX MY	MIN MY	MAX MZ	MIN MZ
Stress (ksi)	41.22	44.96	41.13	46.22	41.95	42.08	46.54	39.99
Check	OK	OK	OK	OK	OK	OK	OK	OK

S (in3) = 1980.3

**Web Splice Plates in Shear (6.13.5.3)**

Vu (kip)	504.97
Rr (kip)	2468.41
Check	OK



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Made	SAE	Job Number	49633	Revised	DJG	Date	1C
	Checked		WME		8/5/2011		8/5/2011
Backchkd	SAE	Sheet No.		Backchkd	DJG	Date	10/11/2011

For **Cleveland InnerBelt : Field Splice - Node 3007**

**Splice Bolt Design**

Shear Resistance (6.13.2.7 & 6.13.6.1.5)

Ns = 1

	Fill PI (in)	R <sub>fill</sub>	R <sub>length</sub>	R <sub>r</sub> (kip)
TF	0.00	1.00	1.0	36.19
Web	0.00	1.00	1.0	36.19
BF	0.00	1.00	1.0	36.19

Slip Resistance (6.13.2.8)

	Kh	(Class A)
Ks	0.33	
Ns	1.0	
Pt	51.0	
Rr	16.83	

**Flange Bolt**

	Shear Resistance			Slip Resistance		
	Pu (kip)	Pu/Bolt	Check	Ps	Ps/Bolt	Check
TF	2623.58	26.14	OK	1692.21	15.67	OK
BF	2660.28	18.70	OK	2513.68	16.36	OK

**Web Bolt**

	Shear Resistance			Slip Resistance		
	Pu (dbl)	Pu (sngl)	Check	Ps (dbl)	Ps (sngl)	Check
	52.78	26.39	OK	31.62	15.81	OK

	Bearing Resistance (6.13.2.9)				
	Pu	Pu/Bolt	Lc	Rr (kip)	Check
TF Outside	2736.70	26.34	1.41	129.09	OK
TF	5660.28	51.48	1.41	258.19	OK
TF Inside	2823.58	26.14	1.41	143.44	OK
BF Inside	2880.28	18.70	1.41	173.13	OK
BF	5696.56	36.99	1.41	344.25	OK
BF Outside	2816.28	18.29	1.41	157.78	OK

	Bearing Resistance (6.13.2.9)			
	Pu/Bolt	Lc	Rr (kip)	Check
Web	52.78	1.41	87.75	OK
Web SPL	26.39	1.41	65.81	OK

**Design Factor of Safety Summary**

Plate	Tension	Comp
TF Outside	NA	1.09
TF Inside	NA	1.09
BF Inside	1.00	NA
BF Outside	1.04	NA

Bolt	Shear	Slip	Bearing
TF	1.38	1.07	5.01
Web	1.37	1.06	1.66
BF	1.94	1.03	8.63

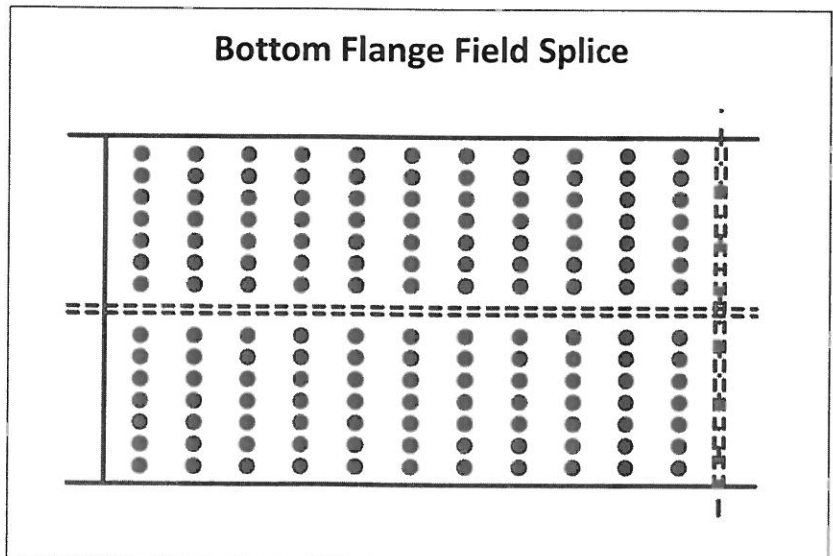
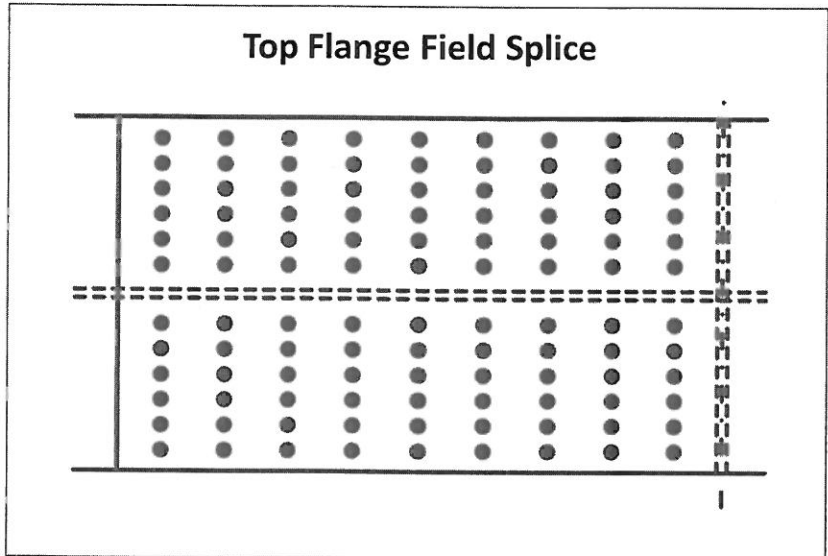
Plate	Shear	Flexure
Web	4.89	1.07

Made	SAE	Date	8/5/2011	Job Number	49633			
Checked	WME	Date	8/5/2011					
For	Cleveland InnerBelt : Field Splice - Node 3007			Backchk'd	SAE	Date	8/5/2011	Sheet No.
	Revised	DJG	Date	10/3/2012				
	Checked	SJL	Date	10/11/2012				
	Backchk'd	DJG	Date	10/11/2011				
	Revised	SJL	Date	9/4/2013				
	Checked	HRH	Date	9/6/2013				
	Backchk'd	SJL	Date	9/6/2013				

## Flange Bolt Pattern - Node 3007

TF Bolt Coordinates (in)		BF Bolt Coordinates (in)	
x (long)	y (trans)	x (long)	y (trans)
0	0	0	0
0	3	0	3
0	6	0	6
0	9	0	9
0	12	0	12
0	15	0	15
0	22	0	18
0	25	0	25
0	28	0	28
0	31	0	31
0	34	0	34
0	37	0	37
3	0	0	40
3	3	0	43
3	6	3	0
3	9	3	3
3	12	3	6
3	15	3	9
3	22	3	12
3	25	3	15
3	28	3	18
3	31	3	25
3	34	3	28
3	37	3	31
6	0	3	34
6	3	3	37
6	6	3	40
6	9	3	43
6	12	6	0
6	15	6	3
6	22	6	6
6	25	6	9
6	28	6	12
6	31	6	15
6	34	6	18
6	37	6	25
9	0	6	28
9	3	6	31
9	6	6	34
9	9	6	37
9	12	6	40
9	15	6	43
9	22	9	0
9	25	9	3
9	28	9	6
9	31	9	9
9	34	9	12
9	37	9	15
12	0	9	18
12	3	9	25
12	6	9	28
12	9	9	31
12	12	9	34
12	15	9	37
12	22	9	40
12	25	9	43
12	28	12	0
12	31	12	3
12	34	12	6

	Top Flange		Bottom Flange	
No. Bolts =	108.0		154.0	
Splice Plate to First Column (in) =	2.000	OK	2.000	OK
No. Longitudinal Space =	8.0		10.0	
Longitudinal Spacing (in) =	3.000	OK	3.000	OK
Last Column to End Girder (in) =	2.000	OK	2.000	OK
Gap (in) =	0.500		0.500	
Edge Flange to First Row (in) =	2.500	OK	2.500	OK
No. Trans Space (per side of web) =	5.0		6.0	
Transverse Spacing (in) =	3.000	OK	3.000	OK
Center Row to CL Web (in) =	3.500		3.500	
Bolt Stagger =	NO		NO	





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Made **SAE** Date **8/5/2011** Job Number **49633**

Checked **WME** Date **8/5/2011**

For **Cleveland InnerBelt : Field Splice - Node 3007**

Backchk'd **SAE** Date **8/5/2011** Sheet No.

Flange Bolt Pattern Cont. - Node 3007

12	37	12	9
15	0	12	12
15	3	12	15
15	6	12	18
15	9	12	25
15	12	12	28
15	15	12	31
15	22	12	34
15	25	12	37
15	28	12	40
15	31	12	43
15	34	15	0
15	37	15	3
18	0	15	6
18	3	15	9
18	6	15	12
18	9	15	15
18	12	15	18
18	15	15	25
18	22	15	28
18	25	15	31
18	28	15	34
18	31	15	37
18	34	15	40
18	37	15	43
21	0	18	0
21	3	18	3
21	6	18	6
21	9	18	9
21	12	18	12
21	15	18	15
21	22	18	18
21	25	18	25
21	28	18	28
21	31	18	31
21	34	18	34
21	37	18	37
24	0	18	40
24	3	18	43
24	6	21	0
24	9	21	3
24	12	21	6
24	15	21	9
24	22	21	12
24	25	21	15
24	28	21	18
24	31	21	25
24	34	21	28
24	37	21	31
		21	34
		21	37
		21	40
		21	43
		24	0
		24	3
		24	6
		24	9
		24	12
		24	15
		24	18
		24	25
		24	28
		24	31
		24	34
		24	37
		24	40



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Made **SAE** Date **8/5/2011** Job Number **49633**

Checked **WME** Date **8/5/2011**

For **Cleveland InnerBelt : Field Splice - Node 3007**

Backchk'd **SAE** Date **8/5/2011**

Sheet No.

24	43
27	0
27	3
27	6
27	9
27	12
27	15
27	18
27	25
27	28
27	31
27	34
27	37
27	40
27	43
30	0
30	3
30	6
30	9
30	12
30	15
30	18
30	25
30	28
30	31
30	34
30	37
30	40
30	43

Flange Bolt Pattern Cont. - Node 3007

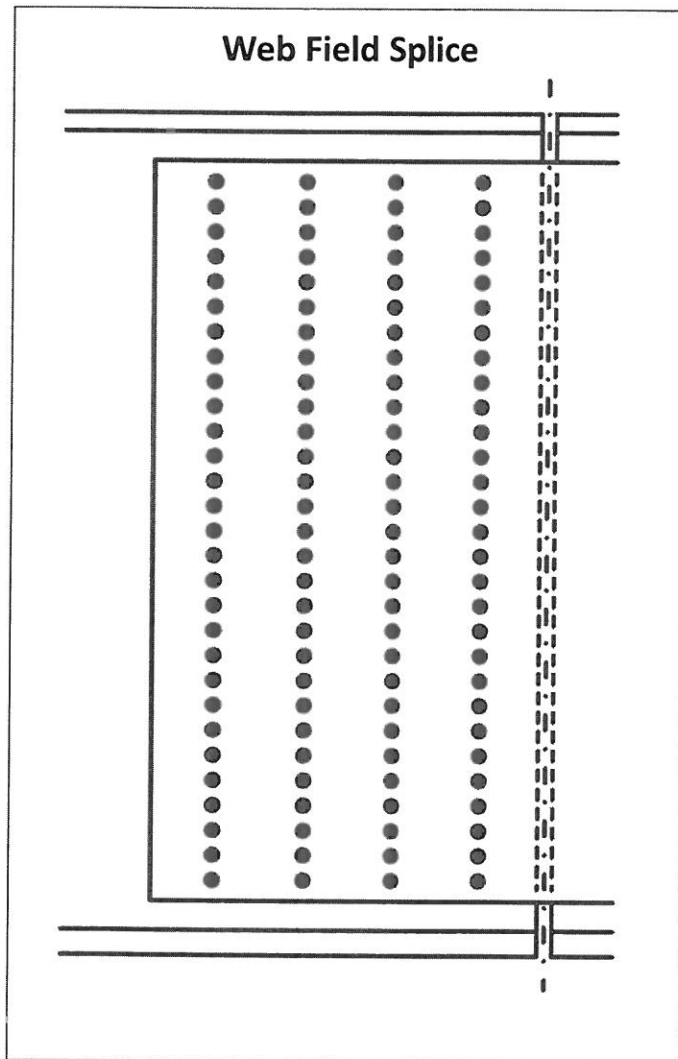


<b>HNTB</b>	The HNTB Companies Engineers Architects Planners	Made	SAE	Date	8/5/2011	Job Number	49633
		Checked	WME	Date	8/5/2011		
For	Cleveland InnerBelt : Field Splice - Node 3007	Backchk'd	SAE	Date	8/5/2011	Sheet No.	

**Web Bolt Pattern - Node 3007**

Bolt Coordinates (in)			
x (long)	y (vert)	(x-x <sub>bar</sub> ) <sup>2</sup>	(y-y <sub>bar</sub> ) <sup>2</sup>
0	0	20.25	1764
0	3	20.25	1521
0	6	20.25	1296
0	9	20.25	1089
0	12	20.25	900
0	15	20.25	729
0	18	20.25	576
0	21	20.25	441
0	24	20.25	324
0	27	20.25	225
0	30	20.25	144
0	33	20.25	81
0	36	20.25	36
0	39	20.25	9
0	42	20.25	0
0	45	20.25	9
0	48	20.25	36
0	51	20.25	81
0	54	20.25	144
0	57	20.25	225
0	60	20.25	324
0	63	20.25	441
0	66	20.25	576
0	69	20.25	729
0	72	20.25	900
0	75	20.25	1089
0	78	20.25	1296
0	81	20.25	1521
0	84	20.25	1764
3	0	2.25	1764
3	3	2.25	1521
3	6	2.25	1296
3	9	2.25	1089
3	12	2.25	900
3	15	2.25	729
3	18	2.25	576
3	21	2.25	441
3	24	2.25	324
3	27	2.25	225
3	30	2.25	144
3	33	2.25	81
3	36	2.25	36
3	39	2.25	9
3	42	2.25	0
3	45	2.25	9
3	48	2.25	36
3	51	2.25	81
3	54	2.25	144
3	57	2.25	225
3	60	2.25	324
3	63	2.25	441
3	66	2.25	576
3	69	2.25	729
3	72	2.25	900
3	75	2.25	1089
3	78	2.25	1296
3	81	2.25	1521
3	84	2.25	1764
6	0	2.25	1764

No. Bolts = 116.0  
 Splice Plate to First Column (in) = 2.0 OK  
 No. Longitudinal Space = 3.0  
 Longitudinal Spacing (in) = 3.000 OK  
 Last Column to End Girder (in) = 2.000 OK  
 Gap (in) = 0.500  
 Top/Bot Web to First Row (in) = 6.000 OK  
 Splice Plate to First Row (in) = 2.500 OK  
 No. Vertical Space = 28.0  
 Vertical Spacing (in) = 3.000 OK  
 Bolt Stagger = NO  
  
 x<sub>bar</sub> (in) = 4.5  
 y<sub>bar</sub> (in) = 42  
 Σ(x-x<sub>bar</sub>)<sup>2</sup> (in<sup>2</sup>) = 1305  
 Σ(y-y<sub>bar</sub>)<sup>2</sup> (in<sup>2</sup>) = 73080  
 Σd<sup>2</sup> (in<sup>2</sup>) = 74385





The HNTB Companies  
Engineers Architects Planners

Made **SAE** Date **8/5/2011** Job Number **49633**

Checked **WME** Date **8/5/2011**

For **Cleveland InnerBelt : Field Splice - Node 3007**

Backchk'd **SAE** Date **8/5/2011**

Sheet No.

Web Bolt Pattern Cont. - Node 3007

6	3	2.25	1521
6	6	2.25	1296
6	9	2.25	1089
6	12	2.25	900
6	15	2.25	729
6	18	2.25	576
6	21	2.25	441
6	24	2.25	324
6	27	2.25	225
6	30	2.25	144
6	33	2.25	81
6	36	2.25	36
6	39	2.25	9
6	42	2.25	0
6	45	2.25	9
6	48	2.25	36
6	51	2.25	81
6	54	2.25	144
6	57	2.25	225
6	60	2.25	324
6	63	2.25	441
6	66	2.25	576
6	69	2.25	729
6	72	2.25	900
6	75	2.25	1089
6	78	2.25	1296
6	81	2.25	1521
6	84	2.25	1764
9	0	20.25	1764
9	3	20.25	1521
9	6	20.25	1296
9	9	20.25	1089
9	12	20.25	900
9	15	20.25	729
9	18	20.25	576
9	21	20.25	441
9	24	20.25	324
9	27	20.25	225
9	30	20.25	144
9	33	20.25	81
9	36	20.25	36
9	39	20.25	9
9	42	20.25	0
9	45	20.25	9
9	48	20.25	36
9	51	20.25	81
9	54	20.25	144
9	57	20.25	225
9	60	20.25	324
9	63	20.25	441
9	66	20.25	576
9	69	20.25	729
9	72	20.25	900
9	75	20.25	1089
9	78	20.25	1296
9	81	20.25	1521
9	84	20.25	1764



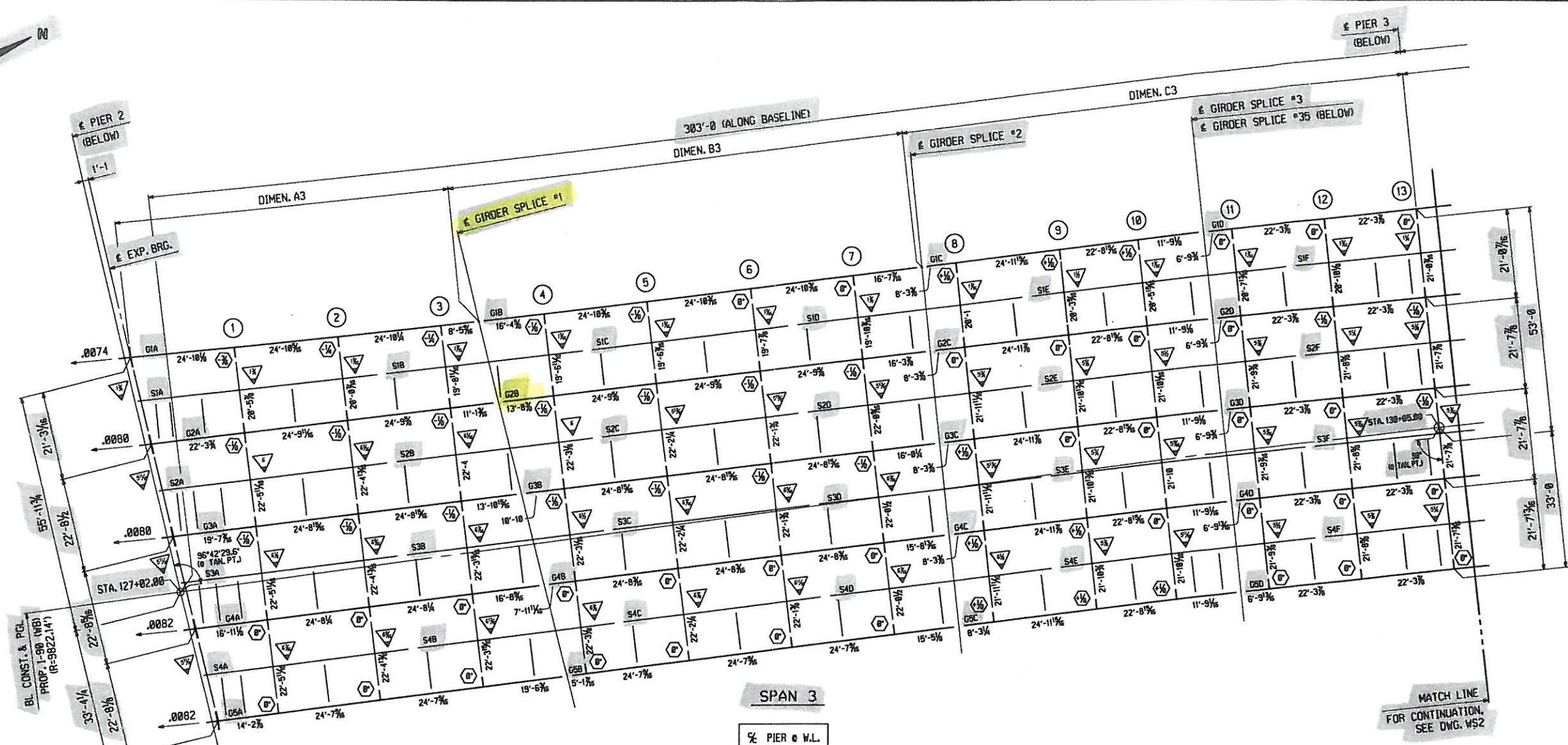
The HNTB Companies  
Engineers Architects Planners

Made	SAE	Date	8/5/2011	Job Number	49633	
Checked	WME	Date	8/5/2011			
For	Cleveland InnerBelt : Field Splice - Node 3007	Backchk'd	SAE	Date	8/5/2011	Sheet No.

Web Bolt Pattern Cont. - Node 3007

522      4872      1305      73080





INCOMPLETE-REFERENCE ONLY

% PIER o W.L.	
G1	309'-9 3/4"
G2	306'-8 1/8"
G3	303'-4 1/4"
G4	300'-0 1/16"
G5	296'-8 3/16"

DIMEN.	DIMEN. A3	DIMEN. B3	DIMEN. C3	
			C3a	C3b
G1	83'-0 1/4"	107'-6 5/8"	67'-9 3/8"	51'-5 1/2"
G2	83'-0 1/4"	104'-5 1/8"	67'-9 5/16"	51'-5 1/2"
G3	83'-0 1/4"	101'-1 1/8"	67'-9 5/16"	51'-5 1/2"
G4	83'-0 3/8"	97'-9 1/8"	67'-9 1/4"	51'-5 5/16"
G5	83'-0 3/8"	94'-5 1/4"	67'-9 1/4"	51'-5 5/16"

CALCULATION PLAN - ROADWAY

- FOR DELTA LEG CALCULATION PLAN (BELOW), SEE DWG. WS10.  
 - FOR ROADWAY STRINGER LEVEL CALCULATION PLAN (ABOVE), SEE DWG. WS18.

**NOTES**

ALL STATIONS ARE GIVEN IN FEET.  
 DIMENSIONS ON PLAN ALONG GIRDERS ARE GIVEN TO THE CHORD AT THE WORKLINE, WHICH IS 8'-0" DOWN FROM THE TOP OF WEB IN FULLY CAMBERED POSITION. ALL OTHER DIMENSIONS ARE GIVEN HORIZONTALLY.  
 ALL STIFFENER AND CONNECTION PLATE SPACINGS ARE GIVEN TO  $\epsilon$  PLATE. FIGURES GIVEN THUS:  $\leftarrow$  ARE THE GRADES OF THE GIRDERS AT THE BEARINGS IN FINAL POSITION; ARROW POINTS DOWNGRADE.  
 ENDS OF GIRDERS AND ALL BEARING STIFFENERS TO BE VERTICAL IN FINAL POSITION.  
 ALL STEEL TO BE ASTM A709 GRADE 50 (U.N.).  
 ALL FIELD CONNECTIONS TO BE MADE WITH 1" H.S. (A325 TYPE 1-MECH. GALV.) BOLTS (U.N.).  
 FIGURES GIVEN THUS:  $\Delta$  ARE THE DIFFERENCES IN ELEVATIONS OF GIRDERS (IN THE PLANE OF THE FLOORBEAM IN NO LOAD POSITION) AT FLOORBEAMS; ARROW POINTS TOWARD LOW GIRDER.  
 FIGURES GIVEN THUS:  $\circ$  ARE FLOORBEAM LINE NUMBERS.  
 FIGURES GIVEN THUS:  $\odot$  ARE SKEWS OF TRANSVERSE MEMBERS WITH RESPECT TO LONGITUDINAL MEMBERS. \*\* INDICATES CLOCKWISE ROTATION FROM PERPENDICULAR. \* INDICATES COUNTERCLOCKWISE ROTATION FROM PERPENDICULAR.  
 FOR TYPICAL DETAIL LAYOUTS, SEE DRAWINGS PREFIXED \*TD.

WORK THIS DWG. WITH DWGS. WS2 & WS18.

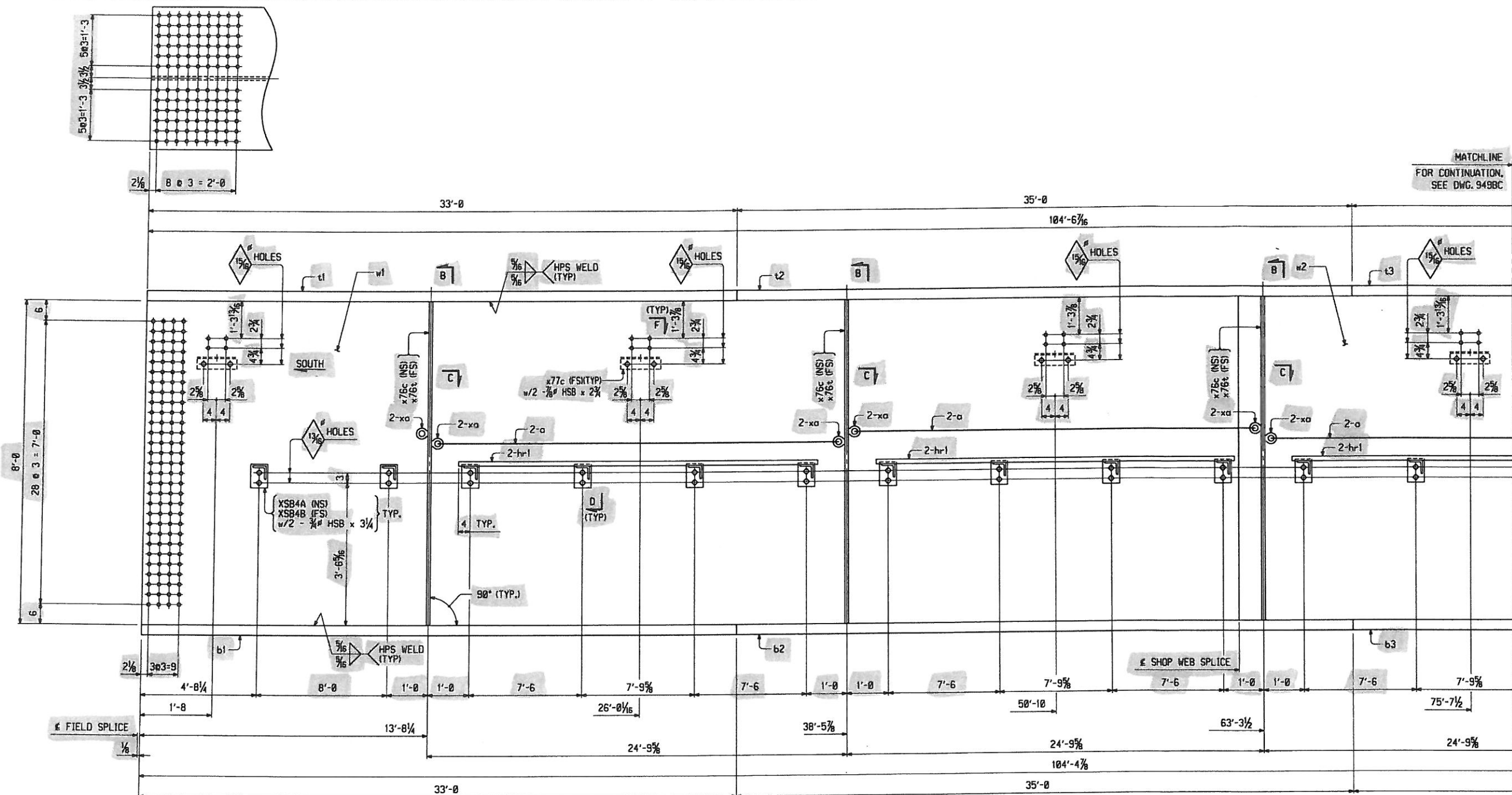
**\*\*NOTE\*\***  
 THE PURPOSE OF THIS DRAWING IS TO COORDINATE GEOMETRIC CONTROL INFORMATION. THIS DRAWING IS SUBMITTED FOR INFORMATION ONLY AND IS NOT INTENDED FOR SHOP FABRICATION. THIS DRAWING IS FOR REFERENCE ONLY, APPROVAL IS NOT REQUIRED.

This shop drawing has been prepared in accordance with Item S01.04A, paragraph 4, of the 2010 ODOT Construction and Material Specifications. I have applied my seal for the limited purpose of compliance with this specification item. Neither I nor High Steel assumes design responsibility or liability under my seal.

▲						
▲	NO.	REVISION	BY	CHK'D	DATE	
▲						
▲	<b>WORKSHEET - CALCULATION PLAN (SPAN 3)</b> CLEVELAND INNERBELT BRIDGE I-90 (WB) - MAIN SPAN - UNIT 2 (SPANS 3 THRU 11) BRIDGE NO. CUY-90-1532 PID NO. 77332/85531 CITY OF CLEVELAND - CUYAHOGA COUNTY, OHIO OHIO DEPARTMENT OF TRANSPORTATION					
▲	SCALE	STATE CONT. OR REF. NO.	FED. AID PROJ. NO.	HSS PROJ. MGR.	DATE	
▲	N.T.S.	CUY-90-14.90	E090 (546); E100 (247)	KEN GLIDDEN	5/9/12	
▲	DRAWING MANAGER	GENERAL CONTRACTOR	MADE BY	CHK'D BY	DATE	
▲	D. PAINTER (UD1-1029)	WALSH CONSTRUCTION	JJP	JMM	5/9/12	
▲	HSS PROJECT NUMBER	DRAWING NUMBER				
▲	S-1100163C-6	WS1 OF				

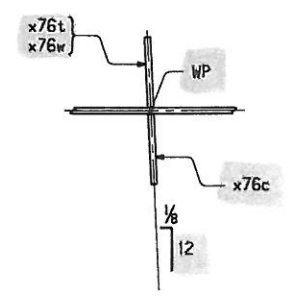
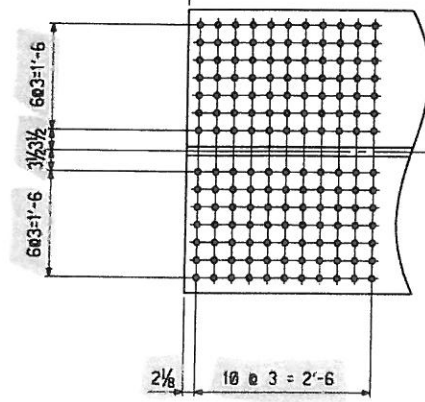
COSTS  
 & TIME  
 FILE  
 ADDRESS





MATCHLINE  
FOR CONTINUATION,  
SEE DWG. 9498C

GIRDERS ~ Mk. G2B



SECTION C

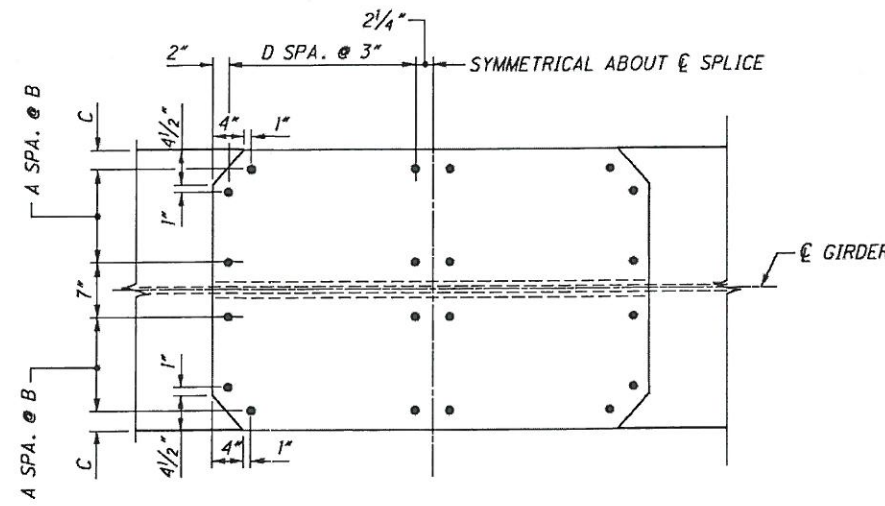
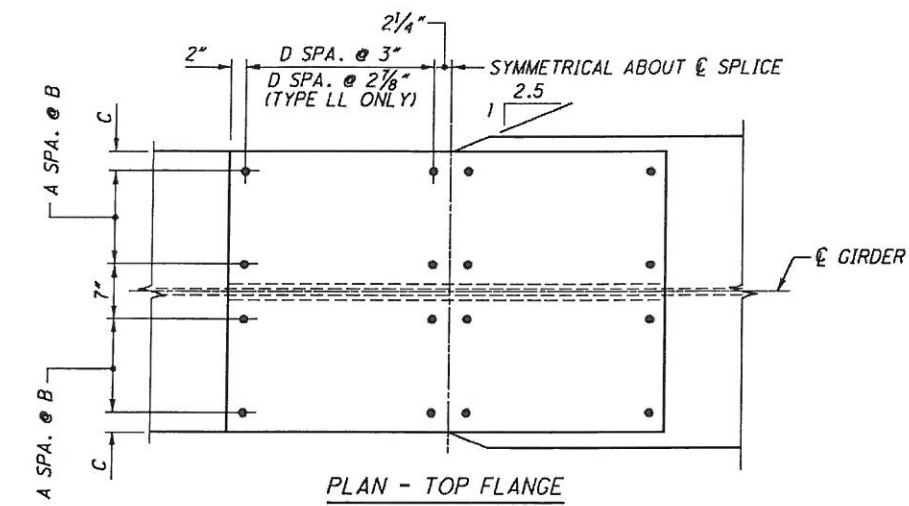
WORK THIS DWG. WITH DWGS 9498C & 949C

This shop drawing has been prepared in accordance with Item 501.04A, paragraph 4, of the 2010 ODOT Construction and Material Specifications. I have applied my seal for the limited purpose of compliance with this specification item. Neither I nor High Steel assumes design responsibility or liability under my seal.

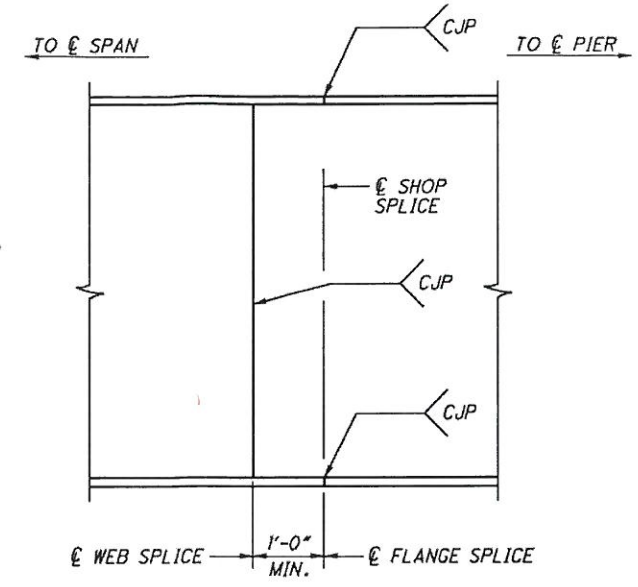
NO.	REVISION		BY	CHK'D	DATE
	1	2			
HOLES 1 1/16" (U.N.)	 Lancaster Facility 855 Old Philadelphia Pike Lancaster, PA 17629-0004 Phone: (717) 299-5211 Williamsport Facility 3501 E. 41st Street Williamsport, PA 17701 Phone: (570) 326-9051 www.HighSteel.com <b>GIRDER - G2B</b>				
BOLTS 3/4" A325 (U.N.)					
COATING					
SEE DWG GNI					
CODICES! 30	OHIO DEPARTMENT OF TRANSPORTATION				
STATE CONT. OR REF. NO.	CUY-90-14.90		FED. AID PROJ. NO.	E090 (546); E100 (247)	
GENERAL CONTRACTOR	WALSH CONSTRUCTION		HSSI PROJ. MGR.	KEN GLIDDEN	
DRAWING MANAGER HSSI PROJECT NUMBER	D. PAINTER (UDI-1029)		MADE BY	JJP	CHK'D BY GTK DATE 6/8/12
	S-1100163C-6		DRAWING NUMBER	949AC OF	

DATE: TIME: FILE/ABBREV:

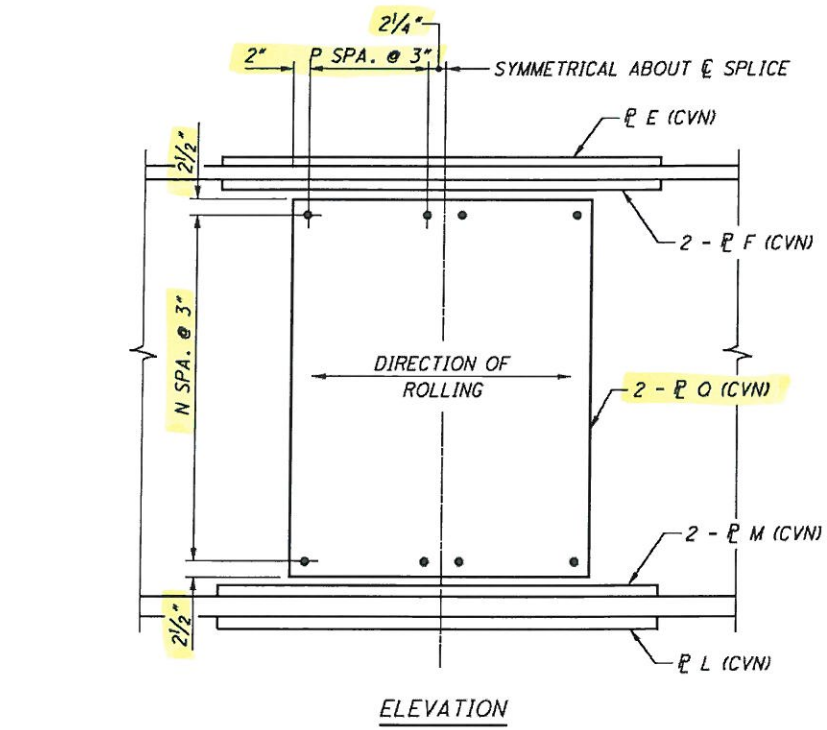




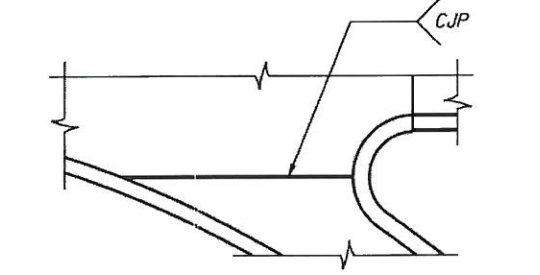
TOP FLANGE SPLICE DETAIL AT F.S. 16 AND F.S. 24 (GIRDER 2 ONLY)



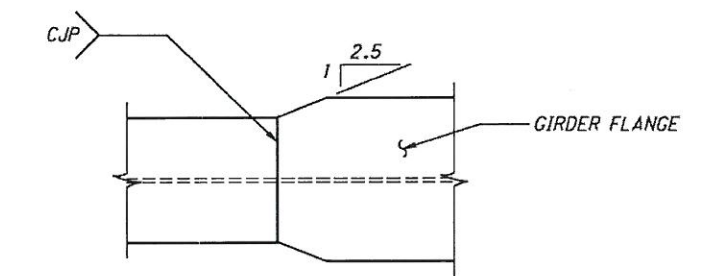
SHOP WEB AND FLANGE SPLICE DETAIL



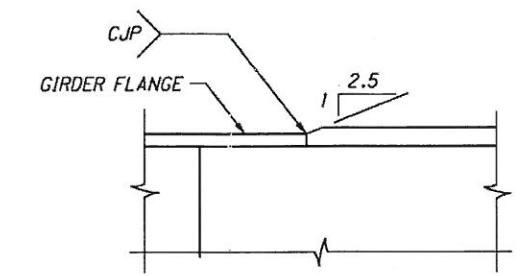
ELEVATION



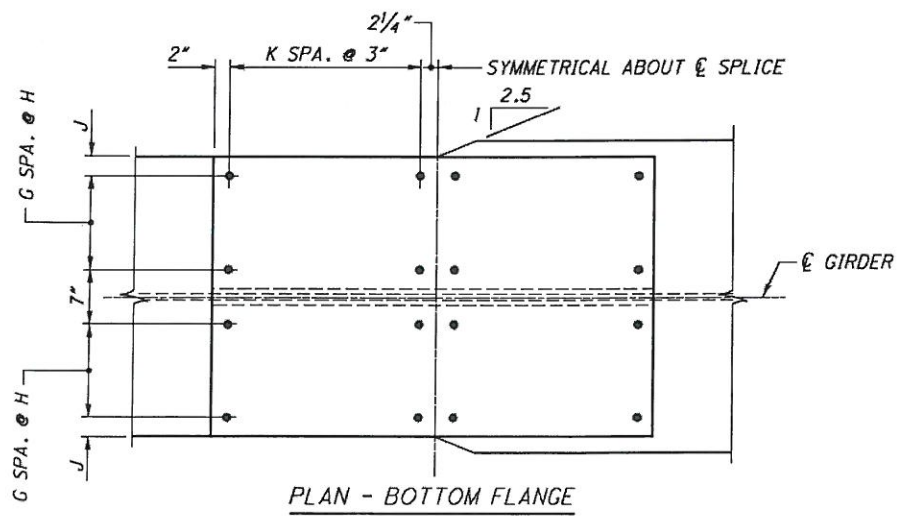
HORIZONTAL WEB SHOP SPLICE DETAIL



SHOP FLANGE SPLICE AT WIDTH TRANSITION



SHOP FLANGE SPLICE AT THICKNESS TRANSITION



PLAN - BOTTOM FLANGE  
 FIELD SPLICE

NOTES:

- HIGH STRENGTH BOLTS FOR FIELD SPLICES SHALL BE 1" φ A325 GALVANIZED TYPE 1 BOLTS.
- WHERE A SHAPE OR PLATE IS LABELED (CVN), THE MATERIAL SHALL MEET THE MINIMUM NOTCH TOUGHNESS REQUIREMENTS IN ACCORDANCE WITH 711.01.
- FOR ADDITIONAL FIELD SPLICE DETAILS, SEE SHEET 30/84.
- FOR SHOP AND FIELD SPLICE LOCATIONS, SEE SHEETS 31/84 AND 32/84.

DESIGNED	DATE	NO.	REVISIONS	DATE
SAE		B	FINAL SUBMITTAL - REVISED	04/14/11
CHECKED		C	FINAL SUBMITTAL - REVISED	06/09/11
		D	FINAL SUBMITTAL - REVISED	08/09/11
		E	APPROVED FOR CONSTRUCTION	08/21/11
		F	MCC - 0055 - FINAL ERECTION SEQUENCE	08/21/12

DESIGN AGENCY	DESIGN AGENCY
WASH HNTB	WASH HNTB
WALSH CONSTRUCTION	WALSH CONSTRUCTION
DESIGNED BY	DESIGNED BY
STRUCTURAL STEEL	STRUCTURAL STEEL
UNIT 2	UNIT 2
FIELD SPLICE DETAILS	FIELD SPLICE DETAILS
BRIDGE NO. CUY-90-1532	BRIDGE NO. CUY-90-1532
J-90 WEST BOUND	J-90 WEST BOUND

DESIGNED	DATE	NO.	REVISIONS	DATE
SAE		B	FINAL SUBMITTAL - REVISED	04/14/11
CHECKED		C	FINAL SUBMITTAL - REVISED	06/09/11
		D	FINAL SUBMITTAL - REVISED	08/09/11
		E	APPROVED FOR CONSTRUCTION	08/21/11
		F	MCC - 0055 - FINAL ERECTION SEQUENCE	08/21/12

DESIGNED	DATE	NO.	REVISIONS	DATE
SAE		B	FINAL SUBMITTAL - REVISED	04/14/11
CHECKED		C	FINAL SUBMITTAL - REVISED	06/09/11
		D	FINAL SUBMITTAL - REVISED	08/09/11
		E	APPROVED FOR CONSTRUCTION	08/21/11
		F	MCC - 0055 - FINAL ERECTION SEQUENCE	08/21/12

29/84  
 CUY-90-14.90  
 PID No. 77332/85531



FIELD SPLICE VARIABLE TABLE

TYPE	TOP FLANGE							FILL P	BOTTOM FLANGE						
	A	B	C	D	E	F	G		H	J	K	L	M	FILL P	
A	5	3"	2 1/2"	8	1/8 x 42 x 4'-8 1/2" GR 70W	1/4 x 19 1/2 x 4'-8 1/2" GR 70W	---	6	3"	2 1/2"	10	1 3/8 x 48 x 5'-8 1/2" GR 70W	1/2 x 22 1/2 x 5'-8 1/2" GR 70W	---	
B	5	3"	2 1/2"	7	1/8 x 42 x 4'-2 1/2" GR 70W	1/8 x 19 1/2 x 4'-2 1/2" GR 70W	1/4 x 42 x 2'-1" GR 50	5	3"	2 1/2"	7	1/8 x 42 x 4'-2 1/2" GR 70W	1/8 x 19 1/2 x 4'-2 1/2" GR 70W	1 x 42 x 2'-1" GR 50	
C	4	3 1/4"	2 1/2"	9	1/8 x 38 x 5'-2 1/2" GR 70W	1/8 x 17 1/2 x 5'-2 1/2" GR 70W	---	4	3 1/4"	2 1/2"	7	1/8 x 38 x 4'-2 1/2" GR 70W	1/8 x 17 1/2 x 4'-2 1/2" GR 70W	1/4 x 38 x 2'-1" GR 50	
D	3	3 1/2"	2"	6	1/8 x 32 x 3'-8 1/2" GR 70W	1 x 14 1/2 x 3'-8 1/2" GR 70W	---	3	3 1/2"	2"	7	1/8 x 32 x 4'-2 1/2" GR 70W	1 x 14 1/2 x 4'-2 1/2" GR 70W	---	
E	3	3 1/2"	2"	7	1/4 x 32 x 4'-2 1/2" GR 50	1 3/8 x 14 1/2 x 4'-2 1/2" GR 50	1 x 32 x 2'-1" GR 50	3	3 1/2"	2"	7	1/8 x 32 x 4'-2 1/2" GR 50	1/4 x 14 1/2 x 4'-2 1/2" GR 50	1 x 32 x 2'-1" GR 50	
F	3	3 1/2"	2"	10	1/2 x 32 x 5'-8 1/2" GR 50	1 3/4 x 14 1/2 x 5'-8 1/2" GR 50	1 x 32 x 2'-10" GR 50	3	3 1/2"	2"	7	1/4 x 32 x 4'-2 1/2" GR 50	1 3/8 x 14 1/2 x 4'-2 1/2" GR 50	1 x 32 x 2'-1" GR 50	
G	4	3"	2 1/2"	9	1/2 x 36 x 5'-2 1/2" GR 50	1 3/8 x 16 1/2 x 5'-2 1/2" GR 50	1 x 36 x 2'-7" GR 50	4	3"	2 1/2"	6	1/4 x 36 x 3'-8 1/2" GR 50	1/4 x 16 1/2 x 3'-8 1/2" GR 50	1/4 x 36 x 1'-10" GR 50	
H	3	3 1/2"	2"	7	1 x 32 x 4'-2 1/2" GR 50	1/8 x 14 1/2 x 4'-2 1/2" GR 50	3/4 x 32 x 2'-1" GR 50	3	3 1/2"	2"	7	1/4 x 32 x 4'-2 1/2" GR 50	1 3/8 x 14 1/2 x 4'-2 1/2" GR 50	1/4 x 32 x 2'-1" GR 50	
I	3	3 1/2"	2"	5	1 x 32 x 3'-2 1/2" GR 50	1/8 x 14 1/2 x 3'-2 1/2" GR 50	1 x 32 x 1'-7" GR 50	3	3 1/2"	2"	6	1/8 x 32 x 3'-8 1/2" GR 50	1 x 14 1/2 x 3'-8 1/2" GR 50	1 x 32 x 1'-10" GR 50	
J	3	3 1/2"	2"	5	3/4 x 32 x 3'-2 1/2" GR 50	1/8 x 14 1/2 x 3'-2 1/2" GR 50	1/4 x 32 x 1'-7" GR 50	3	3 1/2"	2"	5	3/4 x 32 x 3'-2 1/2" GR 50	1/8 x 14 1/2 x 3'-2 1/2" GR 50	1/4 x 32 x 1'-7" GR 50	
K	3	3"	2 1/2"	7	1 3/8 x 30 x 4'-2 1/2" GR 50	1/2 x 13 1/2 x 4'-2 1/2" GR 50	---	3	3"	2 1/2"	6	1 x 30 x 3'-8 1/2" GR 50	1/8 x 13 1/2 x 4'-2 1/2" GR 50	1/2 x 30 x 1'-10" GR 50	
L	5	3 3/8"	2 1/8"	8	1/2 x 45 x 4'-8 1/2" GR 50	1 3/8 x 21 x 4'-8 1/2" GR 50	---	5	3"	2 1/2"	7	1 3/8 x 42 x 4'-2 1/2" GR 50	1/2 x 19 1/2 x 4'-2 1/2" GR 50	---	
L2	5	3 3/8"	2 1/8"	8	1/2 x 45 x 4'-8 1/2" GR 50	1 3/8 x 21 x 4'-8 1/2" GR 50	---	5	3 3/8"	2 1/8"	7	1/4 x 45 x 4'-2 1/2" GR 50	1 3/8 x 21 x 4'-2 1/2" GR 50	---	
M	4	3"	2 1/2"	7	1/8 x 36 x 4'-2 1/2" GR 50	1/4 x 16 1/2 x 4'-2 1/2" GR 50	1 x 36 x 2'-1" GR 50	4	3 3/8"	2 1/2"	9	1 3/8 x 39 x 5'-2 1/2" GR 50	1/2 x 18 x 5'-2 1/2" GR 50	1 x 39 x 2'-7" GR 50	
N	5	3 3/8"	2 1/8"	13	1 3/8 x 45 x 7'-2 1/2" GR 70W	1 3/4 x 21 x 7'-2 1/2" GR 70W	---	5	3 3/8"	2 1/8"	10	1/4 x 45 x 5'-8 1/2" GR 70W	1 3/8 x 21 x 5'-8 1/2" GR 70W	---	
O	5	3"	2 1/2"	9	1 x 42 x 5'-2 1/2" GR 70W	1/8 x 19 1/2 x 5'-2 1/2" GR 70W	1/2 x 42 x 2'-7" GR 50	5	3"	2 1/2"	9	1 x 42 x 5'-2 1/2" GR 70W	1/8 x 19 1/2 x 5'-2 1/2" GR 70W	1/2 x 42 x 2'-7" GR 50	
P	6	3"	2 1/2"	9	1/4 x 48 x 5'-2 1/2" GR 70W	1 3/8 x 22 1/2 x 5'-2 1/2" GR 70W	---	5	3 3/8"	2 3/8"	13	1/2 x 48 x 7'-2 1/2" GR 70W	1/2 x 22 1/2 x 7'-2 1/2" GR 70W	---	
AA	5	3"	2 1/2"	8	1 x 42 x 4'-8 1/2" GR 70W	1/8 x 19 1/2 x 4'-8 1/2" GR 70W	---	5	3"	2 1/2"	6	1/8 x 42 x 3'-8 1/2" GR 70W	1 x 19 1/2 x 3'-8 1/2" GR 70W	1 x 42 x 1'-10" GR 50	
BB	4	3"	2 1/2"	9	1 3/8 x 36 x 5'-2 1/2" GR 50	1/2 x 16 1/2 x 5'-2 1/2" GR 50	1/4 x 36 x 2'-7" GR 50	4	3"	2 1/2"	6	1/8 x 36 x 3'-8 1/2" GR 50	1/4 x 16 1/2 x 3'-8 1/2" GR 50	1/4 x 36 x 1'-10" GR 50	
CC	4	3"	2 1/2"	7	1 x 36 x 4'-2 1/2" GR 70W	1 x 16 1/2 x 4'-2 1/2" GR 70W	---	4	3"	2 1/2"	7	1 x 36 x 4'-2 1/2" GR 70W	1 x 16 1/2 x 4'-2 1/2" GR 70W	---	
DD	3	3 1/2"	2"	9	1/2 x 32 x 5'-2 1/2" GR 50	1 3/8 x 14 1/2 x 5'-2 1/2" GR 50	---	3	3 1/2"	2"	7	1/4 x 32 x 4'-2 1/2" GR 50	1 3/8 x 14 1/2 x 4'-2 1/2" GR 50	---	
EE	3	3 1/2"	2"	8	1 x 32 x 4'-8 1/2" GR 70W	1/8 x 14 1/2 x 4'-8 1/2" GR 70W	---	3	3 1/2"	2"	9	1/8 x 32 x 5'-2 1/2" GR 70W	1/4 x 14 1/2 x 5'-2 1/2" GR 70W	---	
EE2	3	3 1/2"	2"	8	1 x 32 x 4'-8 1/2" GR 70W	1/8 x 14 1/2 x 4'-8 1/2" GR 70W	---	3	3 1/2"	2"	9	1/8 x 32 x 5'-2 1/2" GR 70W	1/4 x 14 1/2 x 5'-2 1/2" GR 70W	---	
FF	3	3 1/2"	2"	13	1 3/4 x 32 x 7'-2 1/2" GR 50	1 3/8 x 14 1/2 x 7'-2 1/2" GR 50	1/4 x 32 x 3'-7" GR 50	3	3 1/2"	2"	6	1/8 x 32 x 3'-8 1/2" GR 50	1/4 x 14 1/2 x 3'-8 1/2" GR 50	1 x 32 x 1'-10" GR 50	
GG	4	3"	2 1/2"	11	1 3/4 x 36 x 6'-2 1/2" GR 50	1 3/4 x 16 1/2 x 6'-2 1/2" GR 50	---	4	3"	2 1/2"	6	1/4 x 36 x 3'-8 1/2" GR 50	1/4 x 16 1/2 x 3'-8 1/2" GR 50	---	
HH	4	3"	2 1/2"	8	1/8 x 36 x 4'-8 1/2" GR 70W	1/4 x 16 1/2 x 4'-8 1/2" GR 70W	---	4	3"	2 1/2"	8	1/8 x 36 x 4'-8 1/2" GR 70W	1/4 x 16 1/2 x 4'-8 1/2" GR 70W	---	
II	5	3"	2 1/2"	12	1/2 x 42 x 6'-8 1/2" GR 70W	1 3/8 x 19 1/2 x 6'-8 1/2" GR 70W	1/4 x 42 x 3'-4" GR 50	5	3 3/8"	2 1/8"	8	1/4 x 45 x 4'-8 1/2" GR 50	1 3/8 x 21 x 4'-8 1/2" GR 50	1/4 x 45 x 2'-4" GR 50	
II2	5	3 3/8"	2 1/8"	12	1 3/8 x 45 x 6'-8 1/2" GR 70W	1/2 x 21 x 6'-8 1/2" GR 70W	1/4 x 45 x 3'-4" GR 50	5	3 3/8"	2 1/8"	8	1/4 x 45 x 4'-8 1/2" GR 50	1 3/8 x 21 x 4'-8 1/2" GR 50	1/4 x 45 x 2'-4" GR 50	
II3	5	3"	2 1/2"	12	1/2 x 42 x 6'-8 1/2" GR 70W	1 3/8 x 19 1/2 x 6'-8 1/2" GR 70W	1/4 x 42 x 3'-4" GR 50	5	3 3/8"	2 1/8"	8	1/4 x 45 x 4'-8 1/2" GR 50	1 3/8 x 21 x 4'-8 1/2" GR 50	1/4 x 45 x 2'-4" GR 50	
JJ	5	3 3/8"	2 1/8"	9	1/8 x 45 x 5'-2 1/2" GR 70W	1/4 x 21 x 5'-2 1/2" GR 70W	---	5	3 3/8"	2 1/8"	9	1/8 x 45 x 5'-2 1/2" GR 70W	1/4 x 21 x 5'-2 1/2" GR 70W	---	
KK	5	3 3/8"	2 1/8"	11	1 3/8 x 45 x 6'-2 1/2" GR 70W	1/2 x 21 x 6'-2 1/2" GR 70W	---	5	3 3/8"	2 1/8"	10	1/4 x 45 x 5'-8 1/2" GR 70W	1 3/8 x 21 x 5'-8 1/2" GR 70W	---	
LL	5	3 3/8"	2 1/8"	15	1 3/8 x 45 x 7'-10 3/4" GR 70W	1 3/4 x 21 x 7'-10 3/4" GR 70W	---	5	3 3/8"	2 1/8"	10	1/4 x 45 x 5'-8 1/2" GR 70W	1 3/8 x 21 x 5'-8 1/2" GR 70W	---	

FIELD SPLICE VARIABLE TABLE

TYPE	N	P	WEB	
			O	FILL P
A	28	3	1/4 x 26 1/2 x 7'-5" GR 50	---
B	28	3	1/8 x 26 1/2 x 7'-5" GR 50	(2) 1/8 x 13 x 7'-5" GR 50
C	28	4	1/4 x 32 1/2 x 7'-5" GR 50	(2) 1/4 x 16 x 7'-5" GR 50
D	28	3	1/4 x 26 1/2 x 7'-5" GR 50	(2) 1/8 x 13 x 7'-5" GR 50
E	28	2	3/8 x 20 1/2 x 7'-5" GR 50	(2) 1 x 10 x 7'-5" GR 50
F	28	4	1/8 x 32 1/2 x 7'-5" GR 50	(2) 1 x 16 x 7'-5" GR 50
G	28	4	1/8 x 32 1/2 x 7'-5" GR 50	(2) 3/16 x 16 x 7'-5" GR 50
H	28	2	5/8 x 20 1/2 x 7'-5" GR 50	---
I	28	2	1/2 x 20 1/2 x 7'-5" GR 50	---
J	28	2	1/2 x 20 1/2 x 7'-5" GR 50	---
K	28	3	3/8 x 26 1/2 x 7'-5" GR 50	(2) 3/16 x 13 x 7'-5" GR 50
L	28	3	3/8 x 26 1/2 x 7'-5" GR 50	(2) 1/16 x 13 x 7'-5" GR 50
L2	28	3	1/8 x 26 1/2 x 7'-5" GR 50	(2) 1/16 x 13 x 7'-5" GR 50
M	28	3	3/8 x 26 1/2 x 7'-5" GR 50	(2) 1 x 13 x 7'-5" GR 50
N	28	4	1/8 x 32 1/2 x 7'-5" GR 50	(2) 1/4 x 16 x 7'-5" GR 50
O	34	3	1/8 x 26 1/2 x 8'-11" GR 50	(2) 1/8 x 13 x 8'-11" GR 50
P	34	5	1/8 x 38 1/2 x 8'-11" GR 50	---
AA	12	6	1/4 x 44 1/2 x 3'-5" GR 50	(2) 1 x 22 x 3'-5" GR 50
BB	12	5	1 x 38 1/2 x 3'-5" GR 50	(2) 3/16 x 19 x 3'-5" GR 50
CC	12	4	1/8 x 32 1/2 x 3'-5" GR 50	(2) 1/8 x 16 x 3'-5" GR 50
DD	12	4	1/8 x 32 1/2 x 3'-5" GR 50	(2) 3/16 x 16 x 3'-5" GR 50
EE	12	4	1/8 x 32 1/2 x 3'-5" GR 50	(2) 1/8 x 16 x 3'-5" GR 50
EE2	12	4	1 x 32 1/2 x 3'-5" GR 50	(2) 1/8 x 16 x 3'-5" GR 50
FF	12	5	1 x 38 1/2 x 3'-5" GR 50	(2) 3/16 x 19 x 3'-5" GR 50
GG	12	5	1 x 38 1/2 x 3'-5" GR 50	(2) 3/16 x 19 x 3'-5" GR 50
HH	12	4	1 x 32 1/2 x 3'-5" GR 50	(2) 1/8 x 16 x 3'-5" GR 50
II	12	6	1/4 x 44 1/2 x 3'-5" GR 50	(2) 3/16 x 22 x 3'-5" GR 50
II2	12	5	1/4 x 38 1/2 x 3'-5" GR 50	(2) 3/16 x 19 x 3'-5" GR 50
II3	12	6	1 3/8 x 44 1/2 x 3'-5" GR 50	(2) 3/16 x 22 x 3'-5" GR 50
JJ	12	4	1 x 32 1/2 x 3'-5" GR 50	(2) 1/8 x 16 x 3'-5" GR 50
KK	12	4	1 x 32 1/2 x 3'-5" GR 50	(2) 1 x 16 x 3'-5" GR 50
LL	12	5	1 x 38 1/2 x 3'-5" GR 50	(2) 1/4 x 19 x 3'-5" GR 50

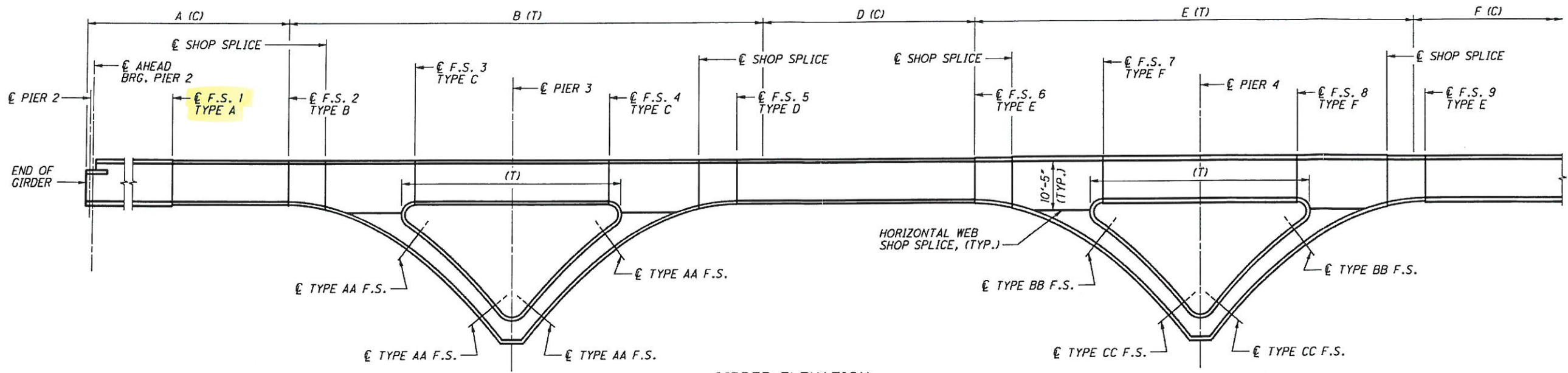
NOTES:

- WHERE FILL PLATE THICKNESSES VARY WITHIN A "TYPE" OF FIELD SPLICE, A "T" IS PROVIDED FOR FILL PLATE THICKNESS.
- FIELD SPLICE CONNECTIONS SHALL HAVE THREADS EXCLUDED FROM THE SHEAR PLANE.
- FOR ADDITIONAL FIELD SPLICE DETAILS, SEE SHEET 29/84.
- FOR FIELD SPLICE LOCATIONS, SEE SHEETS 31/84 AND 32/84.

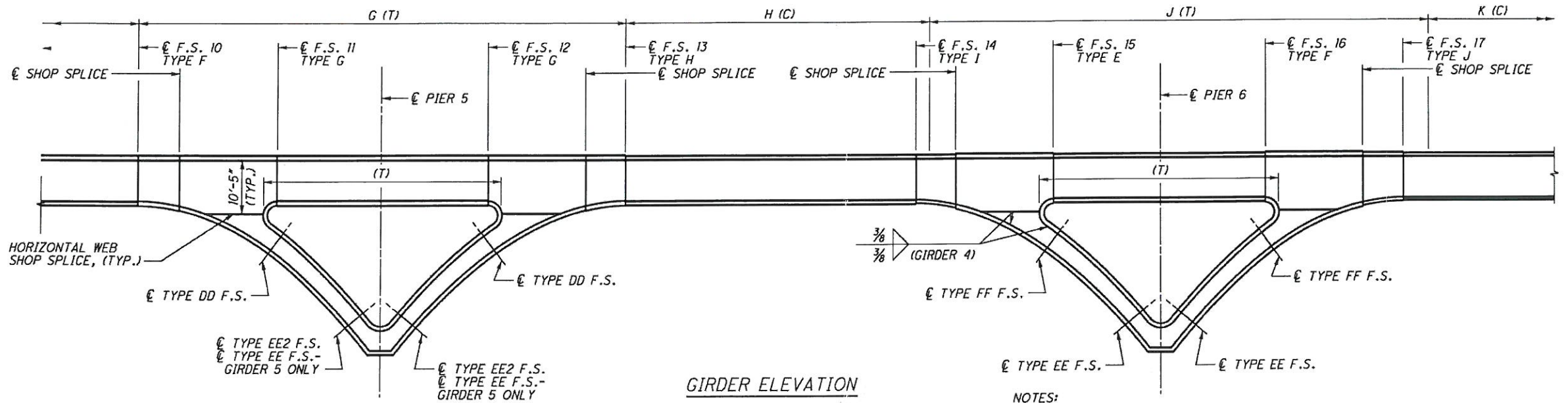
DESIGNED SAE	CHECKED MCC	DATE 09/21/11	REVIEWED HRH	STRUCTURE FILE NUMBER 1809431	BRIDGE NO. CUY-90-1532 1-90 WEST BOUND	PID No. 77332/85531	CUY-90-14-90	30/84			NO.	REVISIONS	DATE
											1	APPROVED FOR CONSTRUCTION	09/21/11
											2	NOC - 0065 - FINAL ERECTION SEQUENCE	06/21/12

Date: 1/17/2013  
Model: Sheet1  
File: 49633-S-BR-FSD03-U2S1Steel.dgn





GIRDER ELEVATION



GIRDER ELEVATION

(C) - DENOTES AREA OF COMPRESSION IN THE TOP FLANGE. THE BOTTOM FLANGE IN THESE AREAS ARE IN TENSION.  
 (T) - DENOTES AREA OF TENSION IN THE TOP FLANGE. THE BOTTOM FLANGE IN THESE AREAS ARE IN COMPRESSION, UNLESS NOTED OTHERWISE.

NOTES:

1. ALL STEEL SHALL BE PAINTED WITH AN IZEU COATING SYSTEM.
2. ALL FLANGE, WEB AND SPLICE PLATES SHALL BE DESIGNATED "CVN" AND SHALL MEET THE MINIMUM NOTCH TOUGHNESS REQUIREMENTS IN ACCORDANCE WITH 711.01.
3. FOR GIRDER ELEVATION DETAILS, SEE SHEETS 21/84 THRU 24/84.
4. FOR FIELD SPLICE DETAILS, SEE SHEETS 29/84 AND 30/84.
5. BOTH TOP AND BOTTOM FLANGES OF ALL DELTA FRAME LEGS ARE COMPRESSION FLANGES FOR DEAD LOAD.
6. WELD ATTACHMENT OF SUPPORT FOR CONCRETE DECK FINISHING MACHINE TO AREAS OF THE FASCIA GIRDER FLANGES DESIGNATED "COMPRESSION". DO NOT WELD ATTACHMENTS TO AREAS DESIGNATED "TENSION". FILLET WELDS TO COMPRESSION FLANGES SHALL BE AT LEAST 1" FROM EDGE OF FLANGE, BE NO MORE THAN 2" LONG AND BE AT LEAST 1/4" FOR THICKNESS UP TO 3/4" OR 5/16" FOR GREATER THAN 3/4" THICK.
7. ALL WEB TO FLANGE WELD SIZES SHALL BE 5/16" UNLESS NOTED OTHERWISE.
8. FOR GIRDER DELTA FRAME GEOMETRY, SEE SHEET 25/84.
9. FOR ADDITIONAL FLANGE TO WEB WELD DETAILS ADJACENT TO THE RADIAL STIFFENERS, SEE SHEET 41/84.

DIMENSION	GIRDER 1	GIRDER 2	GIRDER 3	GIRDER 4	GIRDER 5
A	199'-1 3/4"	196'-0 1/4"	192'-8 3/16"	189'-4 1/16"	186'-0 1/16"
B	258'-6 1/16"	258'-2 5/8"	257'-10 3/4"	257'-6 3/8"	257'-3 1/16"
D	100'-1 3/4"	99'-8 1/16"	99'-2 1/16"	98'-8 3/8"	98'-3 1/4"
E	230'-3"	230'-3"	230'-3"	230'-3"	230'-3"
F	151'-7 3/16"	150'-9 3/16"	150'-0 3/8"	149'-3"	148'-5 1/16"
G	253'-3 1/4"	253'-0 1/16"	252'-8 1/16"	252'-5 1/16"	252'-2 1/2"
H	136'-5 1/4"	136'-0 1/8"	135'-8 1/16"	135'-4 1/16"	134'-11 5/8"
J	244'-0 1/8"	244'-0"	243'-11 3/16"	243'-11 3/16"	244'-0"
K	106'-0 1/16"	106'-0 1/16"	106'-0 5/16"	106'-0 1/8"	106'-0"

Date: 1/17/2013  
 Model: Sheet1  
 File: 496.33-S-BR-FSD07-U2S1Steel.dgn

NO.	REVISIONS	DATE
B	FINAL SUBMITTAL	04/14/11
C	FINAL SUBMITTAL - REVISED	06/09/11
D	FINAL SUBMITTAL - REVISED	06/09/11
I	APPROVED FOR CONSTRUCTION	09/21/11

DESIGN AGENCY  
**WALSH HNTB**  
 WALSH CONSTRUCTION

MAIN SPAN  
 UNIT 2  
 STRUCTURAL STEEL  
 SUPPLEMENTAL GIRDER ELEVATIONS  
 BRIDGE NO. CUY-90-1532  
 1-90 WEST BOUND

DESIGNED	DATE	REVIEWED	DATE
SAE		FWG	09/21/11
CHECKED		LJD	
MCC			

STRUCTURE FILE NUMBER: 1809431  
 CUY-90-14.90  
 PID No. 77332/85531  
 31/84



DATE	REVISIONS	NO.
04/14/11	FINAL SUBMITTAL	B
06/09/11	REVISED	C
08/09/11	FINAL SUBMITTAL - REVISED	D
08/21/11	APPROVED FOR CONSTRUCTION	-

DESIGN AGENCY  
**WALSH HNTB**  
WALSH CONSTRUCTION

CLAYTON'S UNIVERSAL BRIDGE CO.  
**60**  
GIRDER ELEVATIONS  
BRIDGE NO. CUY-90-1532  
1-90 WEST BOUND

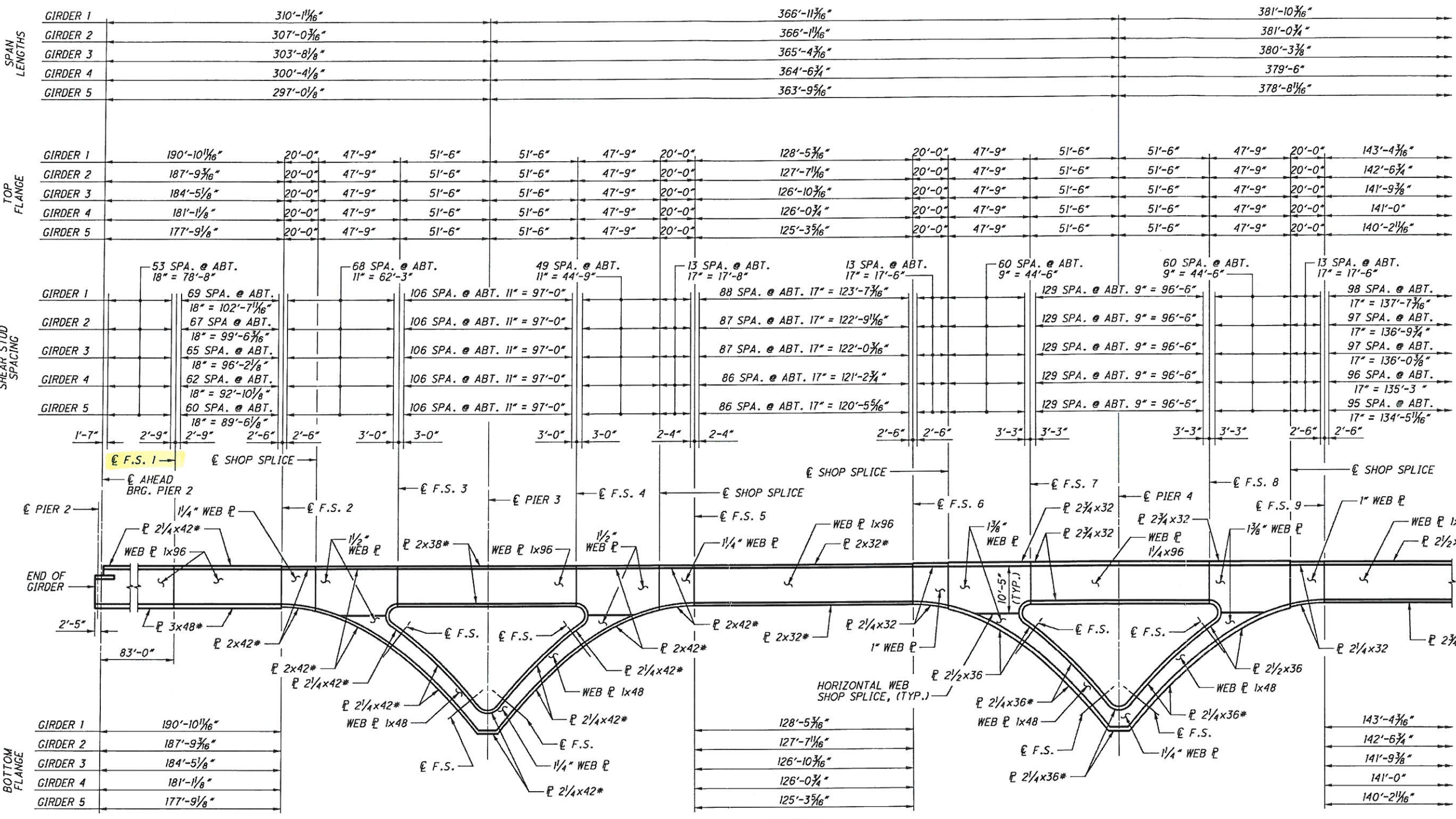
MAIN SPAN  
UNIT 2  
STRUCTURAL STEEL

DESIGNED	DATE	REVIEWED	DATE
SAE	09/21/11	HRH	09/21/11
CHECKED		LJD	
TRG			

STRUCTURE FILE NUMBER: 1809431

CUY-90-14.90  
PID No. 77332/85531

21/84

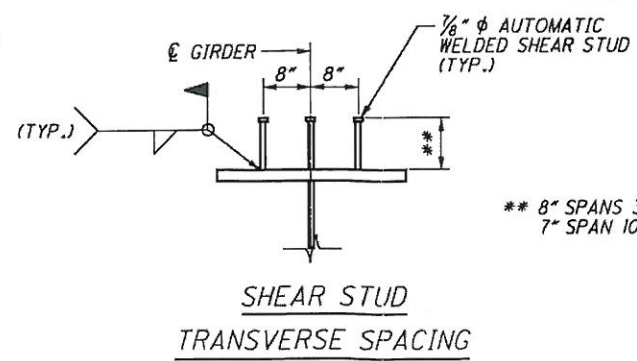


**NOTES:**

- ALL STEEL SHALL BE A709 GRADE 50 UNLESS NOTED OTHERWISE AND SHALL BE PAINTED WITH AN IZEU COATING SYSTEM.
- ALL FLANGE, WEB AND FIELD SPLICE PLATES SHALL BE DESIGNATED "CVN". WHERE A SHAPE OR PLATE IS DESIGNATED (CVN), FURNISH MATERIAL THAT MEETS THE MINIMUM NOTCH TOUGHNESS REQUIREMENTS AS SPECIFIED IN 711.01.
- FOR FRAMING PLAN, SEE SHEETS 15/84 TO 18/84.
- FOR RADIAL STIFFENER DETAILS, SEE SHEET 41/84.
- FOR SHOP AND FIELD SPLICE DETAILS, SEE SHEETS 29/84 THRU 32/84.
- FOR GIRDER DELTA FRAME GEOMETRY, SEE SHEET 25/84.

**ELEVATION**  
(SHEAR STUDS AND RADIAL STIFFENERS NOT SHOWN FOR CLARITY)  
\* A709 GRADE HPS 70W STEEL

- BEARING STIFFENERS NOT SHOWN. FOR BEARING STIFFENER DETAILS AT PIERS 2 AND 11, SEE SHEET 33/84, AND AT PIERS 3 THRU 10, SEE SHEET 41/84.
- FOR END OF GIRDER WEB COPE DETAILS, SEE SHEET 33/84.
- FOR DEFLECTION AND CAMBER DETAILS, SEE SHEETS 49/84 THRU 73/84.
- ALL WEB TO FLANGE WELD SIZES SHALL BE 5/16" UNLESS NOTED OTHERWISE ON SHEETS 31/84 AND 32/84.
- FOR AREAS OF TENSION AND COMPRESSION FLANGES, SEE SHEETS 31/84 AND 32/84.



\*\* 8" SPANS 3-9 AND 11  
7" SPAN 10

Date: 1/17/2013  
Model: Sheet1  
File: 49633-S-BR-GRD02-U2S1Steel.dgn