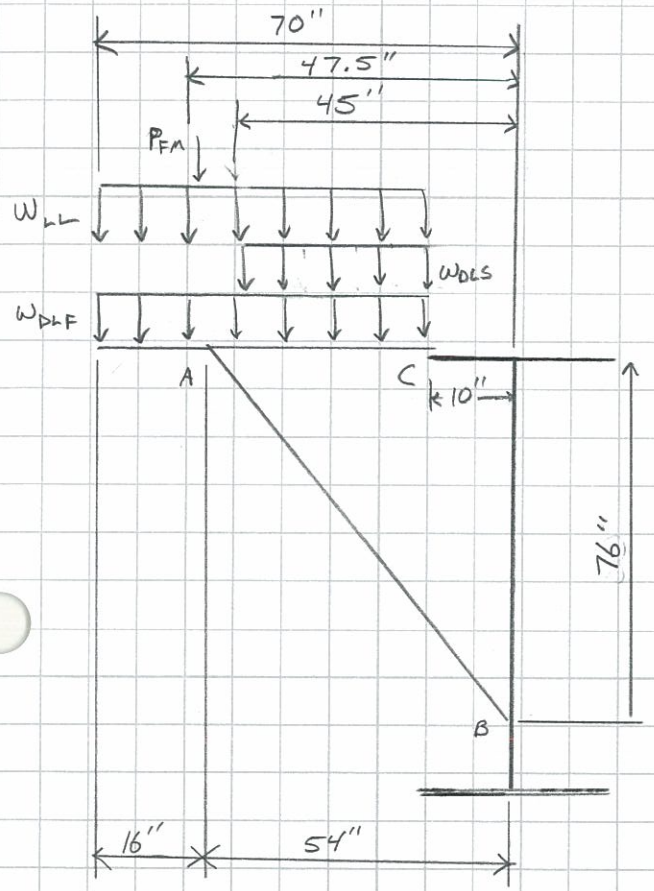
For RFI 00282	Job no. 49633 - Cleveland Innerbelt	Sheet no. 1/2
Made by LJD	Checked by KDG	Backchecked by LJD
Date 3/30/12	Date 4-2-12	Date 4/3/12

HNTB

Oil canning Check (ϕ_o)

Reaction from OH Bracket



Bracket Spacing = 32" = 2.67'

w_{DLF} = 10psf x 2.67' = 26.7 #/ft

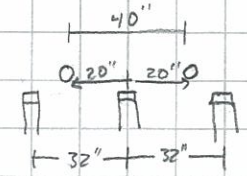
w_{DLS} = (14"/12) x 150 x 2.67' = 467.25 #/ft

w_{LL} = 50 psf x 2.67' = 133.5 #/ft

P_F = 2.25^K

w/spacing 48"-40"-48"

conservatively say 1 wheel/bracket



$\frac{12}{32}$ = 0.375

0.375 x 2 = 0.75

∴ 1 wheel is conservative.

Reaction @ A

Σ Mome abt. C

$$A = \left[\left((w_{DLF} + w_{LL}) \times (70-10)\right)\left(\frac{70-10}{2}\right) + \left(w_{DLS} \times (45-10)\right)\left(\frac{45-10}{2}\right) + \left(P_{FM} \times (47.5-10)\right)\right] \div (54-10)$$

$$A = \left[\left((26.7+133.5)(5')(2.5')\right) + \left(467.25 \times 2.92\right)(1.46') + \left(2250 \times (3.125)\right)\right] \div 3.67$$

$$A = 3.01^K \uparrow$$

$$B = \left(3.01^K \times 4.5/6.33\right) = 2.14^K \rightarrow$$

ME101-1204

For RFI 00282	Job no. 49633 - Cleveland Innerbelt	Sheet no. 2/2
Made by LJD	Checked by EDG	Backchecked by LJP
Date 3/30/12	Date 4-2-12	Date 4/3/12

HNTB

To estimate deflection in the web from the overhang bracket loading, assume the web acts as 96"x32" plate with a 2.14^k concentrated loading. The plate is simply supported on all sides. This will give a conservative estimate of the "oil-canning" effect.

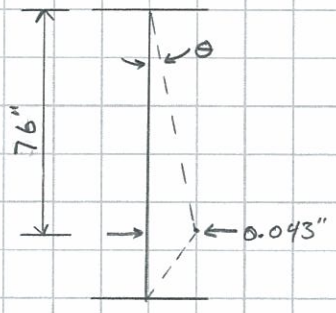
From Roark's Formulas for stress and strain. (Attached)

The max deflection of a simply supported plate with a concentrated load:

$$y_{max} = \frac{\alpha (2.14)(32^2)}{29000(0.6875)^3}$$

$$a/b = 96/32 = 3 \quad \therefore \alpha = 0.1851$$

$$y_{max} = \frac{(0.1851)(2.14)(32^2)}{(29000)(0.6875)^3} = 0.043"$$



$$\theta = \tan^{-1}\left(\frac{0.043}{76}\right) = 0.032°$$

Loss of Deck Thickness

$\phi_o = 0.032°$

$\phi_w = 0.104°$

$\phi_{tot} = 0.136°$

$L_b = 47.5"$

$\delta = [\tan(0.136)] \times 47.5 =$

$\delta = 0.11" < 0.5"$ OK

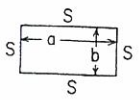
ME101-1204

TABLE 11.4 Formulas for flat plates with straight boundaries and constant thickness

NOTATION: The notation for Table 11.2 applies with the following modifications: a and b refer to plate dimensions, and when used as subscripts for stress, they refer to the stresses in directions parallel to the sides a and b, respectively. σ is a bending stress which is positive when tensile on the bottom and compressive on the top if loadings are considered vertically downward. R is the reaction force per unit length normal to the plate surface exerted by the boundary support on the edge of the plate. r'_o is the equivalent radius of contact for a load concentrated on a very small area and is given by $r'_o = \sqrt{1.6r_o^2 + t^2} - 0.675t$ if $r_o < 0.5t$ and $r'_o = r_o$ if $r_o \geq 0.5t$

Case no., shape, and supports	Case no., loading	Formulas and tabulated specific values

1. Rectangular plate; all edges simply supported



1a. Uniform over entire plate

(At center) $\sigma_{max} = \sigma_b = \dfrac{\beta q b^2}{t^2}$ and $y_{max} = \dfrac{-\alpha q b^4}{Et^3}$

(At center of long sides) $R_{max} = \gamma q b$

a/b	1.0	1.2	1.4	1.6	1.8	2.0	3.0	4.0	5.0	∞
β	0.2874	0.3762	0.4530	0.5172	0.5688	0.6102	0.7134	0.7410	0.7476	0.7500
α	0.0444	0.0616	0.0770	0.0906	0.1017	0.1110	0.1335	0.1400	0.1417	0.1421
γ	0.420	0.455	0.478	0.491	0.499	0.503	0.505	0.502	0.501	0.500

(Ref. 21 for $\nu = 0.3$)

1b. Uniform over small concentric circle of radius r_o (note definition of r'_o)

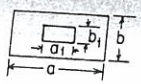
(At center) $\sigma_{max} = \dfrac{3W}{2\pi t^2}\left[(1+\nu)\ln\dfrac{2b}{\pi r'_o} + \beta\right]$

$y_{max} = \dfrac{-\alpha W b^2}{Et^3}$

a/b	1.0	1.2	1.4	1.6	1.8	2.0	∞
β	0.435	0.650	0.789	0.875	0.927	0.958	1.000
α	0.1267	0.1478	0.1621	0.1715	0.1770	0.1805	0.1851

(Ref. 21 for $\nu = 0.3$)

1c. Uniform over central rectangular area

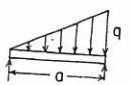


(At center) $\sigma_{max} = \sigma_b = \dfrac{\beta W}{t^2}$ where $W = q a_1 b_1$

b_1/b \ a_1/b	$a = b$						$a = 1.4b$						$a = 2b$					
	0	0.2	0.4	0.6	0.8	1.0	0	0.2	0.4	0.8	1.2	1.4	0	0.4	0.8	1.2	1.6	2.0
0		1.82	1.38	1.12	0.93	0.76		2.0	1.55	1.12	0.84	0.75		1.64	1.20	0.97	0.78	0.64
0.2	1.82	1.28	1.08	0.90	0.76	0.63	1.78	1.43	1.23	0.95	0.74	0.64	1.73	1.31	1.03	0.84	0.68	0.57
0.4	1.39	1.07	0.84	0.72	0.62	0.52	1.39	1.13	1.00	0.80	0.62	0.55	1.32	1.08	0.88	0.74	0.60	0.50
0.6	1.12	0.90	0.72	0.60	0.52	0.43	1.10	0.91	0.82	0.68	0.53	0.47	1.04	0.90	0.76	0.64	0.54	0.44
0.8	0.92	0.76	0.62	0.51	0.42	0.36	0.90	0.76	0.68	0.57	0.45	0.40	0.87	0.76	0.63	0.54	0.44	0.38
1.0	0.76	0.63	0.52	0.42	0.35	0.30	0.75	0.62	0.57	0.47	0.38	0.33	0.71	0.61	0.53	0.45	0.38	0.30

(Values from charts of Ref. 8; $\nu = 0.3$.)

1d. Uniformly increasing along length



$\sigma_{max} = \dfrac{\beta q b^2}{t^2}$ and $y_{max} = \dfrac{-\alpha q b^4}{Et^3}$

a/b	1	1.5	2.0	2.5	3.0	3.5	4.0
β	0.16	0.26	0.34	0.38	0.43	0.47	0.49
α	0.022	0.043	0.060	0.070	0.078	0.086	0.091

(Values from charts of Ref. 8; $\nu = 0.3$.)

1e. Uniformly increasing along

$\sigma_{max} = \dfrac{\beta q b^2}{t^2}$ and $y_{max} = \dfrac{-\alpha q b^4}{Et^3}$

LJD 3/30/12
EDG 4-2-12
LJD 4/3/12

TAEG - Torsional Analysis for Exterior Girders (Version 2.1)

RESULTS SUMMARY for..... Ramp A5_Overhang_RFI00282.prj

-> -> -> -> -> -> -> -> -> -> -> -> -> -> -> -> -> -> -> INPUT DATA <- <- <- <- <- <- <- <- <- <- <- <- <- <- <- <- <- <- <- <- <-

PROJECT INFORMATION

File Name..... Ramp A5_Overhang_RFI00282.prj
File Location..... N:\49633\Bridges\Design\Final Design\A5\TAEG\Ramp A5_Overhang_RFI00282.prj
Project Number..... 49633
Engineer..... LJD
Project Title..... Cleveland Innerbelt Ramp A5
Last Modified..... Friday, March 30, 2012
Created..... Friday, March 30, 2012
Units..... U.S. Customary
Notes.....

GIRDER DATA

Top Flange (Width x Thickness)..... 20 x 1 [in.]
Web (Height x Thickness)..... 96 x .6875 [in.]
Bottom Flange (Width x Thickness)..... 20 x 1 [in.]
Yield Stress, Fy..... 50 [ksi]
Modulus of Elasticity, E..... 29000 [ksi]

BRIDGE LATERAL DATA

Distance Between Lateral Supports..... 300 [in.]
Distance Between Adjacent Girders..... 131 [in.]
Number of Girders..... 5
Bridge Skew..... 0 - 20 [Degrees]
Continuous Girder..... YES
Length of Maximum Side Span..... 2662 [in.]
Length of Maximum Inner Span..... 2168 [in.]

Symmetric Loading ?..... YES
Continuous Diaphragms or Cross-Frames Full Width of Bridge ?..... YES
Continuous Timber Blocks Full Width of Bridge ?..... NO
Continuous Tie-Rods Full Width of Bridge ?..... NO

PERMANENT LATERAL SUPPORT DATA

Stiffener Width..... 12.5 [in.]
Stiffener Thickness..... .875 [in.]
Permanent Lateral Support Height..... 92 [in.]
Yield Stress, Fy..... 50 [ksi]
Modulus of Elasticity, E..... 29000 [ksi]
Top Offset..... 3 [in.]
Cross-Frames..... YES
Total Section Area of Chord Member..... 4.75 [in.^2]
Total Section Area of Web Member..... 4.75 [in.^2]

TEMPORARY LATERAL SUPPORT DATA

Number of Tie-Rods..... NONE

Number of Timber Blocks..... NONE

BRACKET DATA

Bracket Dimension A..... 70 [in.]
Walkway Width (B)..... 15 [in.]
Bracket Dimension C..... 45 [in.]
Bracket Dimension D..... 5 [in.]
Bracket Dimension E..... 5 [in.]
Bracket Dimension F..... 52.4 [Degrees]
Bracket Dimension G..... 80 [in.]
Bracket Spacing..... 32 [in.]
Bracket Weight..... 50 [lbs]

LOAD DATA

L.L. Walkway..... 50 [psf]
L.L. Slab..... 50 [psf]
D.L. Formwork..... 10 [psf]
D.L. Concrete..... 175 [psf]
Top Flange Stress Due to Max. Pos. Moment..... [ksi]
Bottom Flange Stress Due to Max. Pos. Moment..... [ksi]
Top Flange Stress Due to Max. Neg. Moment..... [ksi]
Bottom Flange Stress Due to Max. Neg. Moment..... [ksi]
Maximum Wheel Load..... 2.25 [kips]
Wheel Spacing [1 - 2 - 3]..... 48 - 40 - 48 [in.]

ADVANCED LOAD OPTIONS

Use Advanced Load Options ?..... NO

CONNECTION DETAILS

Welded Connection..... YES

<- <- <- <- <- <- <- <- <- <- <- <- <- <- <- <- <- <- <- OUTPUT DATA -> -> -> -> -> -> -> -> -> -> -> -> -> -> -> -> -> ->

! ! ! NOTICE : Values for 'Stresses Due To Non-Composite Dead Load' on the Load Data Form = 0 [ksi] ! ! !
One of the main limitations of TAEG is that it is not a structural analysis program. The program's input of the 'Stresses Due To Non-Composite Dead Load,' if desired, must be determined from a separate analysis program. Once this information is determined from another source it can be input into the program's Load Data form. These stresses are added to the torsionally induced stresses in the Calculated Stresses form and are compared against yield as is done in the AISC Design Guide.

CALCULATED STRESSES

* POSITIVE MOMENT REGION

Top Flange Stresses Due To Non-Comp. DL..... 0.00 [ksi]
Top Flange Stresses Due To Torsion..... -4.34 [ksi]
Sum of Top Flange Stresses..... -4.34 [ksi]

Bottom Flange Stresses Due To Non-Comp. DL..... 0.00 [ksi]
Bottom Flange Stresses Due To Torsion..... 4.34 [ksi]
Sum of Bottom Flange Stresses..... 4.34 [ksi]

* NEGATIVE MOMENT REGION

Top Flange Stresses Due To Non-Comp. DL..... 0.00 [ksi]
Top Flange Stresses Due To Torsion..... 4.34 [ksi]
Sum of Top Flange Stresses..... 4.34 [ksi]

Bottom Flange Stresses Due To Non-Comp. DL..... 0.00 [ksi]
Bottom Flange Stresses Due To Torsion..... -4.34 [ksi]
Sum of Bottom Flange Stresses..... -4.34 [ksi]

Compare Sums To Yield At..... 50.00 [ksi]

CALCULATED DEFLECTIONS

Lateral Top Flange Deflection (T_horiz)..... 0.09 [in.]
Lateral Bottom Flange Deflection (B_horiz)..... 0.09 [in.]
Vertical Deflection of the Bracket at the Rail (R_vert)..... 0.09 [in.]
Rotation of the Girder (Theta)..... 0.104 [Degrees]

CALCULATED BRACKET FORCES

Hanger Force..... 6.86 [kips]
Horizontal Force (Top)..... 2.16 [kips]
Horizontal Force (Bottom)..... 2.16 [kips]
Vertical Force..... 4.85 [kips]
Diagonal Force..... 3.54 [kips]

L.L. Walkway..... 0.13 [kips/ft.]
L.L. Slab..... 0.13 [kips/ft.]
D.L. Formwork..... 0.03 [kips/ft.]
D.L. Concrete..... 0.47 [kips/ft.]
Wheel Load..... 2.23 [kips]

CALCULATED LATERAL SUPPORT RESPONSE

Lateral Support Reaction of the Top Flange (Ft)..... 10.26 [kips]
Lateral Support Reaction of the Bottom Flange (Fb)..... 10.26 [kips]
Resulting Moment Acting on the Permanent Support (M)..... 82.93 [kip-ft.]

ULTIMATE STRENGTH CHECK

Check for Ultimate Strength Using Eq. (10-155) AASHTO : 0.043 < 1 !

FROM BDGS

stlw001\pmwork\jobs\49633\Techprod\Bridges\Design\BDGS\steelDsn_Run_MoD_F
Girder1.out. & Girder5.out

Max stress from BDGS:

44.64 ksi (Girder5 @ 1.355)

Conservatively, add max lateral stress from TAEG to max BDGS stress.

$44.64^{ksi} + 4.34^{ksi} \times 1.5 \times \frac{1}{3} = 46.81^{ksi}$

Add in wind load stresses calculated by LER:
(see attached page from 2011-08-01_Ramp A5_Superstructure Calculations_Conformance,f

$46.81^{ksi} + 1.54^{ksi}/3 = 47.3^{ksi}$

REFERENCE ONLY

For Cleveland - Ramp A5	Job no. 49603	Sheet no.	HNTB
Made by LER	Checked by DHE	Backchecked by	
Date 3/8/11	Date 03/09/2011	Date	

Results:

Case No	f_ℓ (ksi) TF	BF
1 ✓	1.7 ✓	1.7 ✓
2 ✓	2.4 ✓	1.7 ✓

The stresses at the top and bottom flanges for Case 1 are consistant with those estimated using AASHTO's approximate method. The same can be said for the bottom flange of case 2. The lateral flange stresses due to OH dead loads are combined with the stress due to wind load when checking the capacity of the flanges. Accounting for the larger flange size at the top flange of case 2, the stress due to wind load is:

$$S = \tfrac{1}{16}(22)^2(1.25) = 101 in^3 \checkmark$$

$$f_\ell = \frac{13 k\text{-}ft \times 12}{101} = 1.54 ksi \checkmark$$

Conservatively using the flange stress shown above, which includes live load, to calculate the Str IV construction case design stress gives: ✓

$$f_{\ell u} = 1.25(2.4) + 1.4(1.54) = 5.2 ksi \checkmark$$

Subsequent calculations estimate a factored Str IV (const) lateral flange stress of 5.9 ksi using stresses from the approximate ~~AASHTO~~ method. The later is therefore considered sufficient for design. ✓

AE101-1204

LJD 3/30/12
EDG 4-2-12
LJD 4/3/12

TAEG - Torsional Analysis for Exterior Girders (Version 2.1)

RESULTS SUMMARY for..... Ramp A5_Overhang_Span 1_RFI00282.prj

-> -> -> -> -> -> -> -> -> -> -> -> -> -> -> -> -> -> -> INPUT DATA <- <- <- <- <- <- <- <- <- <- <- <- <- <- <- <- <- <- <- <- <-

PROJECT INFORMATION

File Name..... Ramp A5_Overhang_Span 1_RFI00282.prj
File Location..... N:\49633\Bridges\Design\Final Design\A5\TAEG\Ramp A5_Overhang_Span 1_RFI00282.prj
Project Number..... 49633
Engineer..... LJD
Project Title..... Cleveland Innerbelt Ramp A5
Last Modified..... Friday, March 30, 2012
Created..... Friday, March 30, 2012
Units..... U.S. Customary
Notes.....

GIRDER DATA

Top Flange (Width x Thickness)..... 20 x .875 [in.]
Web (Height x Thickness)..... 96 x .6875 [in.]
Bottom Flange (Width x Thickness)..... 20 x .875 [in.]
Yield Stress, Fy..... 50 [ksi]
Modulus of Elasticity, E..... 29000 [ksi]

BRIDGE LATERAL DATA

Distance Between Lateral Supports..... 180 [in.]
Distance Between Adjacent Girders..... 131 [in.]
Number of Girders..... 5
Bridge Skew..... 0 - 20 [Degrees]
Continuous Girder..... YES
Length of Maximum Side Span..... 2140 [in.]
Length of Maximum Inner Span..... 2124 [in.]

Symmetric Loading ?..... YES
Continuous Diaphragms or Cross-Frames Full Width of Bridge ?..... YES
Continuous Timber Blocks Full Width of Bridge ?..... NO
Continuous Tie-Rods Full Width of Bridge ?..... NO

PERMANENT LATERAL SUPPORT DATA

Stiffener Width..... 12.5 [in.]
Stiffener Thickness..... .875 [in.]
Permanent Lateral Support Height..... 92 [in.]
Yield Stress, Fy..... 50 [ksi]
Modulus of Elasticity, E..... 29000 [ksi]
Top Offset..... 2.875 [in.]
Cross-Frames..... YES
Total Section Area of Chord Member..... 4.75 [in.^2]
Total Section Area of Web Member..... 4.75 [in.^2]

TEMPORARY LATERAL SUPPORT DATA

Number of Tie-Rods..... NONE

Number of Timber Blocks..... NONE

BRACKET DATA

Bracket Dimension A..... 70 [in.]
Walkway Width (B)..... 15 [in.]
Bracket Dimension C..... 45 [in.]
Bracket Dimension D..... 5 [in.]
Bracket Dimension E..... 5 [in.]
Bracket Dimension F..... 52.4 [Degrees]
Bracket Dimension G..... 80 [in.]
Bracket Spacing..... 32 [in.]
Bracket Weight..... 50 [lbs]

LOAD DATA

L.L. Walkway..... 50 [psf]
L.L. Slab..... 50 [psf]
D.L. Formwork..... 10 [psf]
D.L. Concrete..... 175 [psf]
Top Flange Stress Due to Max. Pos. Moment..... [ksi]
Bottom Flange Stress Due to Max. Pos. Moment..... [ksi]
Top Flange Stress Due to Max. Neg. Moment..... [ksi]
Bottom Flange Stress Due to Max. Neg. Moment..... [ksi]
Maximum Wheel Load..... 2.25 [kips]
Wheel Spacing [1 - 2 - 3]..... 48 - 40 - 48 [in.]

ADVANCED LOAD OPTIONS

Use Advanced Load Options ?..... NO

CONNECTION DETAILS

Welded Connection..... YES

<- <- <- <- <- <- <- <- <- <- <- <- <- <- <- <- <- <- <- OUTPUT DATA -> -> -> -> -> -> -> -> -> -> -> -> -> -> -> -> -> -> ->

! ! ! NOTICE : Values for 'Stresses Due To Non-Composite Dead Load' on the Load Data Form = 0 [ksi] ! ! !
One of the main limitations of TAEG is that it is not a structural analysis program. The program's input of the 'Stresses Due To Non-Composite Dead Load,' if desired, must be determined from a separate analysis program. Once this information is determined from another source it can be input into the program's Load Data form. These stresses are added to the torsionally induced stresses in the Calculated Stresses form and are compared against yield as is done in the AISC Design Guide.

CALCULATED STRESSES

* POSITIVE MOMENT REGION

Top Flange Stresses Due To Non-Comp. DL..... 0.00 [ksi]
Top Flange Stresses Due To Torsion..... -1.99 [ksi]
Sum of Top Flange Stresses..... -1.99 [ksi]

Bottom Flange Stresses Due To Non-Comp. DL..... 0.00 [ksi]
Bottom Flange Stresses Due To Torsion..... 1.99 [ksi]
Sum of Bottom Flange Stresses..... 1.99 [ksi]

* NEGATIVE MOMENT REGION

Top Flange Stresses Due To Non-Comp. DL..... 0.00 [ksi]
Top Flange Stresses Due To Torsion..... 1.99 [ksi]
Sum of Top Flange Stresses..... 1.99 [ksi]

Bottom Flange Stresses Due To Non-Comp. DL..... 0.00 [ksi]
Bottom Flange Stresses Due To Torsion..... -1.99 [ksi]
Sum of Bottom Flange Stresses..... -1.99 [ksi]

Compare Sums To Yield At..... 50.00 [ksi]

CALCULATED DEFLECTIONS

Lateral Top Flange Deflection (T_horiz)..... 0.02 [in.]
Lateral Bottom Flange Deflection (B_horiz)..... 0.02 [in.]
Vertical Deflection of the Bracket at the Rail (R_vert)..... 0.02 [in.]
Rotation of the Girder (Theta)..... 0.021 [Degrees]

CALCULATED BRACKET FORCES

Hanger Force..... 6.86 [kips]
Horizontal Force (Top)..... 2.16 [kips]
Horizontal Force (Bottom)..... 2.16 [kips]
Vertical Force..... 4.85 [kips]
Diagonal Force..... 3.54 [kips]

L.L. Walkway..... 0.13 [kips/ft.]
L.L. Slab..... 0.13 [kips/ft.]
D.L. Formwork..... 0.03 [kips/ft.]
D.L. Concrete..... 0.47 [kips/ft.]
Wheel Load..... 2.23 [kips]

CALCULATED LATERAL SUPPORT RESPONSE

Lateral Support Reaction of the Top Flange (Ft)..... 6.64 [kips]
Lateral Support Reaction of the Bottom Flange (Fb)..... 6.64 [kips]
Resulting Moment Acting on the Permanent Support (M)..... 53.61 [kip-ft.]

ULTIMATE STRENGTH CHECK

Check for Ultimate Strength Using Eq. (10-155) AASHTO : 0.02 < 1 !

LJD 3/30/12
EDG 4-2-12
LJD 4/3/12

TAEG - Torsional Analysis for Exterior Girders (Version 2.1)

RESULTS SUMMARY for..... Ramp A5_Overhang_Span 4_RFI00282.prj

-> INPUT DATA <- <- <- <- <- <- <- <- <- <- <- <- <- <- <- <- <- <- <- <- <-

PROJECT INFORMATION

File Name..... Ramp A5_Overhang_Span 4_RFI00282.prj
File Location..... N:\49633\Bridges\Design\Final Design\A5\TAEG\Ramp A5_Overhang_Span 4_RFI00282.prj
Project Number..... 49633
Engineer..... LJD
Project Title..... Cleveland Innerbelt Ramp A5
Last Modified..... Friday, March 30, 2012
Created..... Friday, March 30, 2012
Units..... U.S. Customary
Notes.....

GIRDER DATA

Top Flange (Width x Thickness)..... 22 x 1.25 [in.]
Web (Height x Thickness)..... 96 x .6875 [in.]
Bottom Flange (Width x Thickness)..... 24 x 1.5 [in.]
Yield Stress, Fy..... 50 [ksi]
Modulus of Elasticity, E..... 29000 [ksi]

BRIDGE LATERAL DATA

Distance Between Lateral Supports..... 300 [in.]
Distance Between Adjacent Girders..... 118 [in.]
Number of Girders..... 4
Bridge Skew..... 0 - 20 [Degrees]
Continuous Girder..... YES
Length of Maximum Side Span..... 2662 [in.]
Length of Maximum Inner Span..... 2168 [in.]

Symmetric Loading ?..... YES
Continuous Diaphragms or Cross-Frames Full Width of Bridge ?..... YES
Continuous Timber Blocks Full Width of Bridge ?..... NO
Continuous Tie-Rods Full Width of Bridge ?..... NO

PERMANENT LATERAL SUPPORT DATA

Stiffener Width..... 12.5 [in.]
Stiffener Thickness..... .875 [in.]
Permanent Lateral Support Height..... 92 [in.]
Yield Stress, Fy..... 50 [ksi]
Modulus of Elasticity, E..... 29000 [ksi]
Top Offset..... 3.25 [in.]
Cross-Frames..... YES
Total Section Area of Chord Member..... 4.75 [in.^2]
Total Section Area of Web Member..... 4.75 [in.^2]

TEMPORARY LATERAL SUPPORT DATA

Number of Tie-Rods..... NONE

Number of Timber Blocks..... NONE

BRACKET DATA

Bracket Dimension A..... 70 [in.]
Walkway Width (B)..... 15 [in.]
Bracket Dimension C..... 45 [in.]
Bracket Dimension D..... 5 [in.]
Bracket Dimension E..... 5 [in.]
Bracket Dimension F..... 52.4 [Degrees]
Bracket Dimension G..... 80 [in.]
Bracket Spacing..... 32 [in.]
Bracket Weight..... 50 [lbs]

LOAD DATA

L.L. Walkway..... 50 [psf]
L.L. Slab..... 50 [psf]
D.L. Formwork..... 10 [psf]
D.L. Concrete..... 175 [psf]
Top Flange Stress Due to Max. Pos. Moment..... [ksi]
Bottom Flange Stress Due to Max. Pos. Moment..... [ksi]
Top Flange Stress Due to Max. Neg. Moment..... [ksi]
Bottom Flange Stress Due to Max. Neg. Moment..... [ksi]
Maximum Wheel Load..... 2.25 [kips]
Wheel Spacing [1 - 2 - 3]..... 48 - 40 - 48 [in.]

ADVANCED LOAD OPTIONS

Use Advanced Load Options ?..... NO

CONNECTION DETAILS

Welded Connection..... YES

<- <- <- <- <- <- <- <- <- <- <- <- <- <- <- <- <- <- <- OUTPUT DATA -> -> -> -> -> -> -> -> -> -> -> -> -> -> -> -> -> -> ->

! ! ! NOTICE : Values for 'Stresses Due To Non-Composite Dead Load' on the Load Data Form = 0 [ksi] ! ! !
One of the main limitations of TAEG is that it is not a structural analysis program. The program's input of the 'Stresses Due To Non-Composite Dead Load,' if desired, must be determined from a separate analysis program. Once this information is determined from another source it can be input into the program's Load Data form. These stresses are added to the torsionally induced stresses in the Calculated Stresses form and are compared against yield as is done in the AISC Design Guide.

CALCULATED STRESSES

* POSITIVE MOMENT REGION

Top Flange Stresses Due To Non-Comp. DL..... 0.00 [ksi]
Top Flange Stresses Due To Torsion..... -2.86 [ksi]
Sum of Top Flange Stresses..... -2.86 [ksi]

Bottom Flange Stresses Due To Non-Comp. DL..... 0.00 [ksi]
Bottom Flange Stresses Due To Torsion..... 2.02 [ksi]
Sum of Bottom Flange Stresses..... 2.02 [ksi]

* NEGATIVE MOMENT REGION

Top Flange Stresses Due To Non-Comp. DL..... 0.00 [ksi]
Top Flange Stresses Due To Torsion..... 2.86 [ksi]
Sum of Top Flange Stresses..... 2.86 [ksi]

Bottom Flange Stresses Due To Non-Comp. DL..... 0.00 [ksi]
Bottom Flange Stresses Due To Torsion..... -2.02 [ksi]
Sum of Bottom Flange Stresses..... -2.02 [ksi]

Compare Sums To Yield At..... 50.00 [ksi]

CALCULATED DEFLECTIONS

Lateral Top Flange Deflection (T_horiz)..... 0.05 [in.]
Lateral Bottom Flange Deflection (B_horiz)..... 0.04 [in.]
Vertical Deflection of the Bracket at the Rail (R_vert)..... 0.04 [in.]
Rotation of the Girder (Theta)..... 0.052 [Degrees]

CALCULATED BRACKET FORCES

Hanger Force..... 6.86 [kips]
Horizontal Force (Top)..... 2.16 [kips]
Horizontal Force (Bottom)..... 2.16 [kips]
Vertical Force..... 4.85 [kips]
Diagonal Force..... 3.54 [kips]

L.L. Walkway..... 0.13 [kips/ft.]
L.L. Slab..... 0.13 [kips/ft.]
D.L. Formwork..... 0.03 [kips/ft.]
D.L. Concrete..... 0.47 [kips/ft.]
Wheel Load..... 2.23 [kips]

CALCULATED LATERAL SUPPORT RESPONSE

Lateral Support Reaction of the Top Flange (Ft)..... 10.23 [kips]
Lateral Support Reaction of the Bottom Flange (Fb)..... 10.25 [kips]
Resulting Moment Acting on the Permanent Support (M)..... 83.06 [kip-ft.]

ULTIMATE STRENGTH CHECK

Check for Ultimate Strength Using Eq. (10-155) AASHTO : 0.028 < 1 !

LOAD COMBINATION 1 DC CONSTRUCTIBILITY

---LOAD FACTORS USED (IMPACT NOT INCLUDED IN FACTORS)---	
NU FACTOR	1.0500000
A-DEAD LOADS	
GIRDER: SELF WEIGHT	1.5000000
GIRDER: USER DEFINED	1.5000000
SLAB+HAUNCH: SELF WEIGHT	1.5000000
SLAB+HAUNCH: USER DEFINED	1.5000000
REMOVABLE FORMS:	1.5000000
ADDITIONAL A-DEAD LOAD	1.5000000
A-DEAD LOAD SUPPORT SETTLEMENT	1.5000000
B-DEAD LOADS	
BARRIER	0.0000000
INTEGRAL WEARING SURFACE	0.0000000
FUTURE WEARING SURFACE	0.0000000
FORM REMOVAL	0.0000000
UTILITIES	0.0000000
ADDITIONAL B-DEAD LOAD	0.0000000
B-DEAD LOAD SUPPORT SETTLEMENT	0.0000000
B-DEAD LOAD SIDEWALK	0.0000000
LIVE LOADS	
AUXILIARY LIVE LOAD	0.0000000
MAXIMUM TRUCK MOMENT	0.0000000
MINIMUM TRUCK MOMENT	0.0000000
MAXIMUM TRUCK SHEAR	0.0000000
MINIMUM TRUCK SHEAR	0.0000000
DOUBLE TRUCK	0.0000000
MAXIMUM LANE MOMENT	0.0000000
MINIMUM LANE MOMENT	0.0000000
MAXIMUM LANE SHEAR	0.0000000
MINIMUM LANE SHEAR	0.0000000
MAXIMUM FATIGUE MOMENT	0.0000000
MINIMUM FATIGUE MOMENT	0.0000000
MAXIMUM FATIGUE SHEAR	0.0000000
MINIMUM FATIGUE SHEAR	0.0000000
MAXIMUM PEDESTRIAN MOMENT	0.0000000
MINIMUM PEDESTRIAN MOMENT	0.0000000
MAXIMUM PEDESTRIAN SHEAR	0.0000000
MINIMUM PEDESTRIAN SHEAR	0.0000000

BDGS RUN FOR RAMP A5 COMPLETED ON 5/13/2011

* * * LRFD STRESS SUMMARY (Based on Input Section)* * *
STRESSES IN (ksi)
IMPACT INCLUDED

SPAN.LOC	TOP FLANGE	BOT FLANGE	TOP OF SLAB	TOP REINF	MOMENT(in-kips)	SHEAR(kips)
0.000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
0.750	-0.00154266	0.00121378	0.00000000	0.00000000	-8.17642865	-1.86441202
0.765	-0.00160496	0.00126280	0.00000000	0.00000000	-8.50663875	-1.90354581
0.765	-0.00160496	0.00126280	0.00000000	0.00000000	-8.50662482	-1.90354581
1.000	-0.00278774	0.00219342	0.00000000	0.00000000	-14.77564760	-2.53513060

* * * LRFD STRESS SUMMARY (Based on Input Section)* * *
STRESSES IN (ksi)
IMPACT INCLUDED

SPAN.LOC	TOP FLANGE	BOT FLANGE	TOP OF SLAB	TOP REINF	MOMENT(in-kips)	SHEAR(kips)
1.000	-0.82049885	0.63419075	0.00000000	0.00000000	-4123.88828724	585.86574515 ← Rear Abut.
1.001	-0.46743733	0.36129780	0.00000000	0.00000000	-2349.37483054	585.03087568
1.003	0.00488985	-0.00377952	0.00000000	0.00000000	24.57673366	583.94187346
1.016	3.39447991	-2.62370602	0.00000000	0.00000000	17060.90878919	575.84731098
1.032	8.70188831	-6.42519872	0.00000000	0.00000000	37794.31260672	447.50902261
1.050	12.67491274	-9.35875413	0.00000000	0.00000000	55050.07617592	436.64629132
1.050	12.71242855	-9.38645461	0.00000000	0.00000000	55213.01601628	436.64629132
1.065	15.99945855	-11.81349345	0.00000000	0.00000000	69489.34716054	427.58474404
1.097	22.91328446	-16.91844344	0.00000000	0.00000000	99517.68964870	337.13744204
1.100	23.44558303	-17.31147584	0.00000000	0.00000000	101829.58533478	335.22365445
1.100	23.48392734	-17.33978807	0.00000000	0.00000000	101996.12356187	335.22365445
1.129	28.38994194	-20.96223385	0.00000000	0.00000000	123304.07873613	317.21314504
1.150	31.70385799	-23.40912449	0.00000000	0.00000000	137697.18197067	304.32401125
1.150	31.72270267	-23.42303881	0.00000000	0.00000000	137779.02879631	304.32401125

* * * LRFD STRESS SUMMARY (Based on Input Section)* * *
STRESSES IN (ksi)
IMPACT INCLUDED

SPAN.LOC	TOP FLANGE	BOT FLANGE	TOP OF SLAB	TOP REINF	MOMENT(in-kips)	SHEAR(kips)
1.161	33.51481679	-24.74627918	0.00000000	0.00000000	145562.59603182	246.87161724
1.194	37.45153857	-27.65302984	0.00000000	0.00000000	162660.68864064	226.94730313
1.200	38.17798702	-28.18941637	0.00000000	0.00000000	165815.82217030	223.04481062
1.200	35.78800707	-26.48945922	0.00000000	0.00000000	165832.39603911	223.04481063
1.200	35.79452489	-26.49428356	0.00000000	0.00000000	165862.59796368	223.00664347
1.200	35.80514125	-26.50214155	0.00000000	0.00000000	165911.79142684	223.00664347
1.226	38.49784620	-28.49521976	0.00000000	0.00000000	178389.09118419	160.62520715
1.250	40.26833694	-29.80569625	0.00000000	0.00000000	186593.08866989	145.51916398
1.250	40.29239985	-29.82350706	0.00000000	0.00000000	186704.58997269	145.51916398
1.258	40.86230564	-30.24533822	0.00000000	0.00000000	189345.38646372	140.44640057
1.290	42.88437144	-31.74202475	0.00000000	0.00000000	198715.11722824	75.22890960
1.300	43.21847019	-31.98931696	0.00000000	0.00000000	200263.24467434	69.18612891
1.300	43.24221112	-32.00688944	0.00000000	0.00000000	200373.25399502	69.18612891
1.323	43.92785779	-32.51438933	0.00000000	0.00000000	203550.36386276	55.05008496
1.350	44.53837696	-32.96628157	0.00000000	0.00000000	206379.35220900	37.89174781
1.350	44.53160879	-32.96127193	0.00000000	0.00000000	206347.99028599	37.89174781
1.355	44.62481895	-33.03766606	0.00000000	0.00000000	206826.24701145	-13.58027286
1.387	44.27849518	-32.77392341	0.00000000	0.00000000	205175.13452350	-33.75911333
1.400	44.04415751	-32.60047205	0.00000000	0.00000000	204089.27413965	-41.85417899
1.400	44.03640198	-32.59473159	0.00000000	0.00000000	204053.33700941	-41.85417899
1.419	43.59670958	-32.26928099	0.00000000	0.00000000	202015.90723562	-103.93928385
1.450	41.92659218	-31.03309853	0.00000000	0.00000000	194277.01395765	-123.14992409
1.450	41.92975902	-31.03544256	0.00000000	0.00000000	194291.68831334	-123.14992409
1.452	41.82917779	-30.96099464	0.00000000	0.00000000	193825.62082803	-124.11814447
1.484	39.74046150	-29.41497511	0.00000000	0.00000000	184147.05230060	-193.69237255
1.500	38.19610955	-28.27188133	0.00000000	0.00000000	176990.92354997	-203.83972792
1.500	38.19742822	-28.27285738	0.00000000	0.00000000	176997.03390209	-203.83972792
1.516	36.57622429	-27.07287953	0.00000000	0.00000000	169484.79286955	-213.87124955
1.548	33.09288817	-24.49459414	0.00000000	0.00000000	153343.90795279	-280.48287894
1.549	32.93413442	-24.37708827	0.00000000	0.00000000	152608.28402724	-281.22110715

1.549	32.93421140	-24.37714524	0.00000000	0.00000000	152608.64069990	-281.22110715
1.550	32.89707522	-24.34965790	0.00000000	0.00000000	152436.56125903	-281.39351627
1.550	32.89709967	-24.34967600	0.00000000	0.00000000	152436.67453874	-281.39351628
1.550	32.85972247	-24.32201025	0.00000000	0.00000000	152263.47822195	-281.56693782
1.550	32.85693073	-24.31994387	0.00000000	0.00000000	152250.54203562	-281.56693782
1.581	28.58024495	-21.15443949	0.00000000	0.00000000	132433.48323926	-300.66177456
1.600	25.71476881	-19.03348000	0.00000000	0.00000000	119155.60588673	-312.86142481
1.600	25.69199232	-19.01662137	0.00000000	0.00000000	119050.06552734	-312.86142481
1.613	23.74459546	-17.57512196	0.00000000	0.00000000	110024.59062626	-345.13544545
1.615	23.35644193	-17.28782097	0.00000000	0.00000000	108226.01569568	-346.60109644
1.615	19.17259215	-15.09404383	0.00000000	0.00000000	108220.24058771	-346.60109644
1.619	18.60152571	-14.64445924	0.00000000	0.00000000	104996.83984453	-349.21244040
1.619	18.60152571	-14.64445924	0.00000000	0.00000000	104996.83984453	-349.21244040
1.622	18.26821401	-14.38205229	0.00000000	0.00000000	103115.45250249	-350.72760574
1.622	18.26821401	-14.38205229	0.00000000	0.00000000	103115.45250249	-350.72760574
1.645	14.98534364	-11.79754057	0.00000000	0.00000000	84585.19751621	-365.31524562
1.650	14.26226273	-11.22827925	0.00000000	0.00000000	80503.74677969	-368.45069405
1.650	14.26226273	-11.22827925	0.00000000	0.00000000	80503.74677969	-368.45069405
1.677	10.22364090	-8.04878561	0.00000000	0.00000000	57707.63125079	-378.64097255
1.700	6.75924501	-5.32136394	0.00000000	0.00000000	38152.75032163	-393.89112430
1.700	6.75924501	-5.32136394	0.00000000	0.00000000	38152.75032163	-393.89112430
1.703	6.32541376	-4.97982076	0.00000000	0.00000000	35703.97750331	-395.63944941
1.703	5.02203642	-4.84843516	0.00000000	0.00000000	35703.97750331	-395.63944941
1.709	4.19216128	-4.04724706	0.00000000	0.00000000	29804.01168206	-399.91678044
1.742	0.06099935	-0.05889073	0.00000000	0.00000000	433.67255538	-404.43549717
1.742	-0.00000003	0.00000003	0.00000000	0.00000000	-0.00022182	-404.74460586
1.750	-0.99276252	0.95844480	0.00000000	0.00000000	-7058.00749908	-409.74255814
1.750	-0.99276252	0.95844480	0.00000000	0.00000000	-7058.00749908	-409.74255814
1.774	-4.11580277	3.97352810	0.00000000	0.00000000	-29261.14372630	-425.08213173
1.800	-7.64206165	7.37789161	0.00000000	0.00000000	-54330.94755403	-441.76243540
1.800	-7.64206165	7.37789161	0.00000000	0.00000000	-54330.94755402	-441.76243540
1.806	-8.50038947	8.20654884	0.00000000	0.00000000	-60433.19664724	-441.40610041
1.838	-13.04950195	12.59840806	0.00000000	0.00000000	-92774.93942092	-462.05273625
1.850	-14.73215564	14.22289594	0.00000000	0.00000000	-104737.70197820	-469.45964680
1.850	-14.73215564	14.22289594	0.00000000	0.00000000	-104737.70197820	-469.45964680
1.865	-16.94017592	16.35458959	0.00000000	0.00000000	-120435.53845381	-479.00545479

* * * LRFD STRESS SUMMARY (Based on Input Section)* * *
STRESSES IN (ksi)
IMPACT INCLUDED

SPAN.LOC	TOP FLANGE	BOT FLANGE	TOP OF SLAB	TOP REINF	MOMENT(in-kips)	SHEAR(kips)
1.865	-11.40295002	10.95894931	0.00000000	0.00000000	-120435.53845381	-479.00545479
1.871	-11.98629052	11.51957607	0.00000000	0.00000000	-126596.65699250	-463.62238448
1.900	-14.90942532	14.32889173	0.00000000	0.00000000	-157470.18654087	-484.53717561
1.900	-14.90942532	14.32889173	0.00000000	0.00000000	-157470.18654087	-484.53717561
1.903	-15.20698919	14.61486925	0.00000000	0.00000000	-160612.99293987	-486.61581262
1.935	-18.58347068	17.85987949	0.00000000	0.00000000	-196274.67400851	-516.00981487
1.950	-20.21059734	19.42365014	0.00000000	0.00000000	-213460.04051670	-526.59715471
1.950	-20.21059734	19.42365014	0.00000000	0.00000000	-213460.04051670	-526.59715471
1.968	-22.17994018	21.31631197	0.00000000	0.00000000	-234259.82162802	-539.13318731 ← Pier 1
2.000	-25.93404234	24.92423932	0.00000000	0.00000000	-273909.85204310	-562.25655977

* * * LRFD STRESS SUMMARY (Based on Input Section)* * *
STRESSES IN (ksi)
IMPACT INCLUDED

SPAN.LOC	TOP FLANGE	BOT FLANGE	TOP OF SLAB	TOP REINF	MOMENT(in-kips)	SHEAR(kips)
2.000	-25.93402415	24.92422183	0.00000000	0.00000000	-273909.65989228	433.19792229
2.034	-23.05419961	22.15653005	0.00000000	0.00000000	-243493.56426389	411.69365019
2.050	-21.73763697	20.89123088	0.00000000	0.00000000	-229588.30905958	401.47912000
2.050	-21.73763697	20.89123088	0.00000000	0.00000000	-229588.30905958	401.47912000
2.068	-20.32095305	19.52970889	0.00000000	0.00000000	-214625.59409142	369.41915134
2.100	-17.99468045	17.29401519	0.00000000	0.00000000	-190055.99653120	348.99009093
2.100	-17.99468045	17.29401519	0.00000000	0.00000000	-190055.99653120	348.99009093
2.110	-17.28755473	16.61442307	0.00000000	0.00000000	-182587.48468055	342.53880932
2.141	-15.20863987	14.61645566	0.00000000	0.00000000	-160630.42708985	322.82655881
2.141	-20.14910953	19.42421498	0.00000000	0.00000000	-160630.42708985	322.82655881
2.150	-19.40184512	18.70383454	0.00000000	0.00000000	-154673.17119379	317.73861934
2.150	-19.40184512	18.70383454	0.00000000	0.00000000	-154673.17119379	317.73861934
2.153	-19.18709985	18.49681505	0.00000000	0.00000000	-152961.20354781	310.07413262
2.195	-15.82551873	15.25617188	0.00000000	0.00000000	-126162.39092402	285.45507097
2.200	-15.44080608	14.88529984	0.00000000	0.00000000	-123095.42871887	282.50078283
2.200	-15.44080608	14.88529984	0.00000000	0.00000000	-123095.42871887	282.50078283
2.237	-12.74185223	12.28344491	0.00000000	0.00000000	-101579.13739605	263.44933933
2.250	-11.86210418	11.43534713	0.00000000	0.00000000	-94565.71065004	256.06361849
2.250	-11.86210418	11.43534713	0.00000000	0.00000000	-94565.71065004	256.06361849
2.280	-9.90663639	9.55023024	0.00000000	0.00000000	-78976.55390349	238.83027530
2.300	-8.64445499	8.33345771	0.00000000	0.00000000	-68914.33568564	227.01312407
2.300	-8.64445499	8.33345771	0.00000000	0.00000000	-68914.33568564	227.01312407
2.322	-7.34933905	7.08493551	0.00000000	0.00000000	-58589.56040795	211.28332327
2.350	-5.83560136	5.62565682	0.00000000	0.00000000	-46521.91391969	195.03474163
2.350	-5.83560136	5.62565682	0.00000000	0.00000000	-46521.91391969	195.03474163
2.364	-5.10304594	4.91945618	0.00000000	0.00000000	-40681.91932062	186.66426033
2.400	-3.43094729	3.30751379	0.00000000	0.00000000	-27351.80566508	165.98424713
2.400	-3.43094729	3.30751379	0.00000000	0.00000000	-27351.80566508	165.98424713
2.407	-3.13467642	3.02190172	0.00000000	0.00000000	-24989.90893873	148.27050047
2.424	-2.48735751	2.39787108	0.00000000	0.00000000	-19829.42714576	138.42287314
2.424	-4.47731145	4.32052111	0.00000000	0.00000000	-19829.42714576	138.42287314
2.449	-2.86823914	2.76779667	0.00000000	0.00000000	-12703.05618796	125.51683313
2.450	-2.81731341	2.71865431	0.00000000	0.00000000	-12477.51281994	125.08663125
2.450	-2.81731341	2.71865431	0.00000000	0.00000000	-12477.51281994	125.08663125
2.492	-0.53613713	0.51736222	0.00000000	0.00000000	-2374.48127309	105.61270843
2.500	-0.11564360	0.11159389	0.00000000	0.00000000	-512.17037425	101.31069377
2.500	-0.11564360	0.11159389	0.00000000	0.00000000	-512.17037424	101.31069377
2.502	0.00000000	0.00000000	0.00000000	0.00000000	-0.00002199	100.09514697
2.534	1.39148600	-1.34275775	0.00000000	0.00000000	6162.70961146	84.10263756
2.550	2.00937231	-1.93900639	0.00000000	0.00000000	8899.24731269	75.92881113
2.550	2.00937231	-1.93900639	0.00000000	0.00000000	8899.24731269	75.92881113
2.576	2.88198531	-2.78106147	0.00000000	0.00000000	12763.93618176	60.79406902
2.600	3.50527549	-3.38252474	0.00000000	0.00000000	15524.40693236	48.74843082
2.600	3.50527549	-3.38252474	0.00000000	0.00000000	15524.40693236	48.74843082
2.619	3.89883917	-3.76230627	0.00000000	0.00000000	17267.44903481	39.28400012
2.650	4.36989920	-4.21687031	0.00000000	0.00000000	19353.71230350	23.36654810
2.650	4.36989920	-4.21687031	0.00000000	0.00000000	19353.71230350	23.36654810
2.661	4.47855634	-4.32172241	0.00000000	0.00000000	19834.94059810	13.02506343
2.687	4.55869416	-4.39905389	0.00000000	0.00000000	20189.86052212	0.00000013

HNTB BRIDGE DESIGN PROGRAM BDGS VERSION 2.9.1.0 PAGE 111
RUN TIME: 05/13/2011 17:46:26.149 OUTPUT
Filename: M:\jobs\49633\Techprod\Bridges\Ramp A5\Design\BDGS\SteelDsn_Run_MOD_Final\CL Girder 5.OUT

* * * LRFD STRESS SUMMARY (Based on Input Section)* * *
STRESSES IN (ksi)
IMPACT INCLUDED

SPAN.LOC	TOP FLANGE	BOT FLANGE	TOP OF SLAB	TOP REINF	MOMENT(in-kips)	SHEAR(kips)
2.700	4.53708136	-4.37819795	0.00000000	0.00000000	20094.14026049	-6.76420242
2.700	4.53708136	-4.37819795	0.00000000	0.00000000	20094.14026049	-6.76420242
2.703	4.52468607	-4.36623672	0.00000000	0.00000000	20039.24311971	-8.48500756
2.746	4.13367046	-3.98891403	0.00000000	0.00000000	18307.48608729	-35.15355610
2.750	4.06004862	-3.91787035	0.00000000	0.00000000	17981.42461051	-37.30456275
2.750	4.06004862	-3.91787035	0.00000000	0.00000000	17981.42461051	-37.30456275
2.788	3.20075217	-3.08866547	0.00000000	0.00000000	14175.71293181	-56.66362612
2.800	2.86120481	-2.76100868	0.00000000	0.00000000	12671.90208205	-62.68644558
2.800	2.86120481	-2.76100868	0.00000000	0.00000000	12671.90208205	-62.68644558
2.831	1.83068499	-1.76657649	0.00000000	0.00000000	8107.86450542	-81.85189716
2.850	1.01930692	-0.98361195	0.00000000	0.00000000	4514.37709175	-91.74652946
2.850	1.01930692	-0.98361195	0.00000000	0.00000000	4514.37709175	-91.74652946
2.872	0.00000000	0.00000000	0.00000000	0.00000000	0.00001278	-102.83630178
2.873	-0.05120027	0.04940730	0.00000000	0.00000000	-226.75931217	-103.36196726
2.900	-1.48500258	1.43299948	0.00000000	0.00000000	-6576.88229071	-117.12841237
2.900	-1.48500258	1.43299948	0.00000000	0.00000000	-6576.88229071	-117.12841237
2.915	-2.37023262	2.28722978	0.00000000	0.00000000	-10497.45044502	-125.81102307
2.950	-4.61362811	4.45206412	0.00000000	0.00000000	-20433.15580239	-143.44928101
2.950	-4.61362811	4.45206412	0.00000000	0.00000000	-20433.15580239	-143.44928101
2.958	-5.14542072	4.96523395	0.00000000	0.00000000	-22788.39574251	-147.32109352
3.000	-8.35771956	8.06504175	0.00000000	0.00000000	-37015.24739006	-168.83116401 ← Pier 2

* * * LRFD STRESS SUMMARY (Based on Input Section)* * *
STRESSES IN (ksi)
IMPACT INCLUDED

SPAN.LOC	TOP FLANGE	BOT FLANGE	TOP OF SLAB	TOP REINF	MOMENT(in-kips)	SHEAR(kips)
3.000	-8.35774775	8.06506895	0.00000000	0.00000000	-37015.37223575	177.49882511
3.008	-7.64509069	7.37736813	0.00000000	0.00000000	-33859.10728173	173.19680519
3.017	-6.94991811	6.70653990	0.00000000	0.00000000	-30780.27879128	168.89478527
3.025	-6.27223000	6.05258366	0.00000000	0.00000000	-27778.88676442	164.59276535
3.033	-5.61202638	5.41549961	0.00000000	0.00000000	-24854.93120116	160.29074543
3.041	-5.00694807	4.83161046	0.00000000	0.00000000	-22175.11847923	156.24393874
3.041	-5.10490861	4.91694503	0.00000000	0.00000000	-22175.12139345	156.24393874
3.041	-5.09370388	4.90615287	0.00000000	0.00000000	-22126.44939775	156.16946918
3.041	-5.09370619	4.90615509	0.00000000	0.00000000	-22126.45939370	156.16946918
3.042	-5.06653718	4.87998645	0.00000000	0.00000000	-22008.44044156	155.98872550
3.042	-5.03449361	4.84912273	0.00000000	0.00000000	-21869.24695851	155.77531185
3.042	-5.03449776	4.84912672	0.00000000	0.00000000	-21869.26496526	155.77531185
3.043	-4.99748275	4.81347461	0.00000000	0.00000000	-21708.47612134	155.52842333
3.043	-4.99751854	4.81350909	0.00000000	0.00000000	-21708.63160202	155.52842333
3.050	-4.44371050	4.28009235	0.00000000	0.00000000	-19302.95472689	151.78660395
3.050	-4.44374477	4.28012535	0.00000000	0.00000000	-19303.10358845	151.78660395
3.050	-4.42918317	4.26609992	0.00000000	0.00000000	-19239.84973243	151.68670557
3.059	-3.80961813	3.66934736	0.00000000	0.00000000	-16548.53219740	147.38468563
3.067	-3.20787889	3.08976426	0.00000000	0.00000000	-13934.64787544	143.08266570
3.075	-2.62396559	2.52735075	0.00000000	0.00000000	-11398.19731567	138.78064576
3.084	-2.05787684	1.98210548	0.00000000	0.00000000	-8939.17451888	136.45426318
3.092	-1.50138786	1.44610651	0.00000000	0.00000000	-6521.85195685	132.15224325
3.100	-0.98731699	0.95096382	0.00000000	0.00000000	-4288.78868018	128.05002008
3.100	-0.98733330	0.95097952	0.00000000	0.00000000	-4288.85950830	128.05002008
3.100	-0.96272669	0.92727894	0.00000000	0.00000000	-4181.97130560	127.85022332
3.109	-0.44188917	0.42561874	0.00000000	0.00000000	-1919.51449396	123.54820339
3.116	-0.00001616	0.00001557	0.00000000	0.00000000	-0.07021464	119.77740849
3.117	0.06111783	-0.05886747	0.00000000	0.00000000	265.48867326	119.24618346
3.125	0.54630022	-0.52618535	0.00000000	0.00000000	2373.06377463	114.94416353
3.134	1.01366132	-0.97633815	0.00000000	0.00000000	4403.22535275	110.64214360
3.139	1.31535148	-1.26692002	0.00000000	0.00000000	5713.73182337	107.77411467
3.139	1.69376466	-1.61807740	0.00000000	0.00000000	5713.66072241	107.77411467
3.142	1.88420046	-1.80000342	0.00000000	0.00000000	6356.06730100	106.39356133
3.150	2.40279821	-2.29542720	0.00000000	0.00000000	8105.47892759	102.54038316
3.150	2.40277689	-2.29540684	0.00000000	0.00000000	8105.40703009	102.54038316
3.151	2.44081691	-2.33174701	0.00000000	0.00000000	8233.72930616	102.25185614
3.159	2.97533433	-2.84237908	0.00000000	0.00000000	10036.84356389	98.11015096
3.167	3.48779458	-3.33193963	0.00000000	0.00000000	11765.55127119	93.96845065

3.513	4.33267505	-4.11226297	0.00000000	0.00000000	13914.01313984	-89.16...944
3.542	2.43464472	-2.31078934	0.00000000	0.00000000	7818.65204612	-103.71150570
3.550	1.86978335	-1.77466363	0.00000000	0.00000000	6004.64835369	-107.66085952
3.550	1.86978160	-1.77466197	0.00000000	0.00000000	6004.64274929	-107.66085952
3.575	0.00000010	-0.00000010	0.00000000	0.00000000	0.00032209	-119.80870878
3.582	-0.55665535	0.53178075	0.00000000	0.00000000	-1877.79336117	-131.34792407
3.584	-0.71994074	0.68776961	0.00000000	0.00000000	-2428.61216861	-132.30939871
3.600	-2.14131581	2.04562938	0.00000000	0.00000000	-7223.40786018	-140.40045767
3.600	-2.14128738	2.04560223	0.00000000	0.00000000	-7223.31196921	-140.40045767
3.624	-4.33716719	4.14335737	0.00000000	0.00000000	-14630.78329387	-152.05642133
3.625	-4.50715641	4.30575048	0.00000000	0.00000000	-15204.21643759	-152.92174880
3.637	-5.72012290	5.46451458	0.00000000	0.00000000	-19295.97703483	-158.95925214
3.637	-3.43346284	3.19241976	0.00000000	0.00000000	-19295.89948008	-158.95925214
3.650	-4.21130497	3.91565420	0.00000000	0.00000000	-23667.33563752	-165.75446629
3.650	-4.21128725	3.91563772	0.00000000	0.00000000	-23667.23603743	-165.75446629
3.665	-5.21135084	4.84549277	0.00000000	0.00000000	-29287.54630394	-179.36034430
3.667	-5.31824709	4.94488447	0.00000000	0.00000000	-29888.29822306	-180.20401255
3.700	-7.71384020	7.17229718	0.00000000	0.00000000	-43351.41870118	-198.16419684
3.700	-7.71378292	7.17224392	0.00000000	0.00000000	-43351.09679097	-198.16419684
3.707	-8.26545427	7.68518570	0.00000000	0.00000000	-46451.46380456	-202.07426643
3.709	-8.37074825	7.78308760	0.00000000	0.00000000	-47043.21097764	-202.81247700
3.749	-11.68326067	10.86304815	0.00000000	0.00000000	-65659.37464973	-229.23520325
3.750	-11.76857576	10.94237377	0.00000000	0.00000000	-66138.84146033	-229.76246675
3.750	-11.76857433	10.94237244	0.00000000	0.00000000	-66138.83339236	-229.76246675
3.750	-11.78560877	10.95821099	0.00000000	0.00000000	-66234.56615379	-229.86795614
3.791	-15.53605526	14.44536085	0.00000000	0.00000000	-87311.89877032	-251.94912721
3.792	-15.62979979	14.53252414	0.00000000	0.00000000	-87838.73863746	-252.47642056
3.800	-16.42661414	15.27339888	0.00000000	0.00000000	-92316.79776420	-256.91372193
3.800	-16.42651358	15.27330538	0.00000000	0.00000000	-92316.23262296	-256.91372193
3.833	-19.75261555	18.36590143	0.00000000	0.00000000	-111008.76901519	-274.66305066
3.833	-12.82058295	11.77853570	0.00000000	0.00000000	-111008.19158242	-276.95590830
3.833	-12.87406760	11.82767316	0.00000000	0.00000000	-111471.29331744	-277.42881375
3.850	-14.03483347	12.89409286	0.00000000	0.00000000	-121521.89089031	-287.49611834
3.850	-14.03476340	12.89402849	0.00000000	0.00000000	-121521.28424858	-287.49611834
3.875	-15.83153877	14.54476332	0.00000000	0.00000000	-137078.82834652	-302.41978778
3.875	-15.87528779	14.58495645	0.00000000	0.00000000	-137457.63320210	-302.77446658
3.900	-17.79585902	16.34942512	0.00000000	0.00000000	-154087.07511577	-317.93455391
3.900	-17.79574285	16.34931839	0.00000000	0.00000000	-154086.06924115	-317.93455391

HNTB BRIDGE DESIGN PROGRAM BDGS VERSION 2.9.1.0 PAGE 113
RUN TIME: 05/13/2011 17:46:26.149 OUTPUT
Filename: M:\jobs\49633\Techprod\Bridges\Ramp A5\Design\BDGS\SteelDsn_Run_MOD_Final\CL Girder 5.OUT

* * * LRFD STRESS SUMMARY (Based on Input Section)* * *
STRESSES IN (ksi)
IMPACT INCLUDED

SPAN.LOC	TOP FLANGE	BOT FLANGE	TOP OF SLAB	TOP REINF	MOMENT(in-kips)	SHEAR(kips)
3.916	-19.10708728	17.55407773	0.00000000	0.00000000	-165440.46503453	-334.09934937
3.917	-19.13929651	17.58366902	0.00000000	0.00000000	-165719.35161513	-334.33580206
3.950	-21.98702659	20.19993777	0.00000000	0.00000000	-190376.68333329	-354.58867213
3.950	-21.98694137	20.19985948	0.00000000	0.00000000	-190375.94547562	-354.58867213
3.958	-22.71200019	20.86598606	0.00000000	0.00000000	-196653.93366793	-359.56322852
3.958	-22.72923829	20.88182306	0.00000000	0.00000000	-196803.19128857	-359.68145487
4.000	-26.58147727	24.42095499	0.00000000	0.00000000	-230158.15534106	-385.02710766 ← Pier 3

* * * LRFD STRESS SUMMARY (Based on Input Section)* * *
STRESSES IN (ksi)
IMPACT INCLUDED

SPAN.LOC	TOP FLANGE	BOT FLANGE	TOP OF SLAB	TOP REINF	MOMENT(in-kips)	SHEAR(kips)
4.000	-26.58146677	24.42094533	0.00000000	0.00000000	-230158.06423553	451.19994114
4.033	-22.02373147	20.23365930	0.00000000	0.00000000	-190694.49577809	425.73606156
4.050	-19.75278325	18.14729202	0.00000000	0.00000000	-171031.28265108	412.46150050
4.050	-19.75266482	18.14718323	0.00000000	0.00000000	-171030.25726923	412.46150050
4.066	-17.73061393	16.28948309	0.00000000	0.00000000	-153522.14454803	393.54546301
4.099	-13.77226070	12.65286181	0.00000000	0.00000000	-119248.38061410	368.08158436
4.100	-13.60944313	12.50327793	0.00000000	0.00000000	-117838.60980563	366.99634089
4.100	-13.60941844	12.50325525	0.00000000	0.00000000	-117838.39601062	366.99634089
4.110	-12.51162366	11.49468839	0.00000000	0.00000000	-108333.03937336	359.59362506
4.110	-19.27637756	17.92309729	0.00000000	0.00000000	-108332.33409544	359.59362506
4.131	-15.51797427	14.42854923	0.00000000	0.00000000	-87210.28456077	340.87738313
4.150	-12.49736403	11.61999814	0.00000000	0.00000000	-70234.59725575	328.06835620
4.150	-12.49731479	11.61995235	0.00000000	0.00000000	-70234.32051058	328.06835620
4.164	-10.24076689	9.52182331	0.00000000	0.00000000	-57552.62761104	318.16346004
4.197	-5.32736991	4.95336683	0.00000000	0.00000000	-29939.56797370	291.53535718
4.200	-4.93073650	4.58457870	0.00000000	0.00000000	-27710.50691394	289.59927029
4.200	-4.93073395	4.58457633	0.00000000	0.00000000	-27710.49253487	289.59927029
4.219	-2.29569750	2.13453018	0.00000000	0.00000000	-12901.71181525	276.39274201
4.219	-3.17925881	2.46641926	0.00000000	0.00000000	-12901.67362971	276.39274201
4.230	-1.16286464	0.90213220	0.00000000	0.00000000	-4718.99298954	269.11745339
4.237	0.00000792	-0.00000614	0.00000000	0.00000000	0.03214120	264.83089226
4.250	2.36827106	-1.83726764	0.00000000	0.00000000	9610.62376281	255.87903371
4.250	2.36828052	-1.83727499	0.00000000	0.00000000	9610.66216965	255.87903371
4.263	4.56360164	-3.54037078	0.00000000	0.00000000	18519.44199348	242.81028658
4.296	9.70659177	-7.53022208	0.00000000	0.00000000	39390.08648693	220.98442322
4.300	10.32926049	-8.01327874	0.00000000	0.00000000	41916.92344484	218.19383784
4.300	10.32922177	-8.01324870	0.00000000	0.00000000	41916.76630159	218.19383784
4.329	14.80593278	-11.35097813	0.00000000	0.00000000	58296.22431000	196.02236885
4.350	17.60951465	-13.50034602	0.00000000	0.00000000	69334.92346040	181.85375332
4.350	17.60952565	-13.50035445	0.00000000	0.00000000	69334.96679078	181.85375332
4.378	20.97379540	-16.07957407	0.00000000	0.00000000	82581.29356843	163.23593995
4.400	23.35595344	-17.90585711	0.00000000	0.00000000	91960.69719683	148.64985985
4.400	23.35583897	-17.90576934	0.00000000	0.00000000	91960.24646281	148.64985985
4.427	26.01572048	-19.94496924	0.00000000	0.00000000	102433.14598218	127.79886263
4.450	27.90595360	-21.39411771	0.00000000	0.00000000	109875.66617547	112.79531796
4.450	27.90596387	-21.39412559	0.00000000	0.00000000	109875.70661943	112.79531796
4.477	29.84097194	-22.87760080	0.00000000	0.00000000	117494.52173440	95.01243313
4.500	31.25091959	-23.95853809	0.00000000	0.00000000	123045.98715892	79.59142452
4.500	31.25075002	-23.95840809	0.00000000	0.00000000	123045.31949639	79.59142452
4.526	32.54022984	-24.94698862	0.00000000	0.00000000	128122.45998804	60.83219525
4.550	33.41792097	-25.61987111	0.00000000	0.00000000	131578.24218493	44.99372269
4.550	33.41792744	-25.61987607	0.00000000	0.00000000	131578.26765677	44.99372269
4.576	34.06603418	-26.11674752	0.00000000	0.00000000	134130.09443066	28.04576510
4.600	34.40512782	-26.37671389	0.00000000	0.00000000	135465.22671500	11.78982928
4.600	34.40496376	-26.37658811	0.00000000	0.00000000	135464.58074675	11.78982928
4.618	34.47761817	-26.43228866	0.00000000	0.00000000	135750.64699196	0.00000000
4.625	34.46582640	-26.42324853	0.00000000	0.00000000	135704.21912453	-5.99350250
4.650	34.21559441	-26.23140801	0.00000000	0.00000000	134718.96679099	-22.66690159
4.650	34.21559725	-26.23141019	0.00000000	0.00000000	134718.97797172	-22.66690159
4.674	33.69703865	-25.83385689	0.00000000	0.00000000	132677.22827774	-38.77993141

4.700	32.84995886	-25.18444262	0.00000000	0.00000000	129341.97382067	-55.87079498
4.700	32.84975822	-25.18428880	0.00000000	0.00000000	129341.18382758	-55.87079498

* * * LRFD STRESS SUMMARY (Based on Input Section)* * *
STRESSES IN (ksi)
IMPACT INCLUDED

SPAN.LOC	TOP FLANGE	BOT FLANGE	TOP OF SLAB	TOP REINF	MOMENT(in-kips)	SHEAR(kips)
4.724	31.80226371	-24.38122640	0.00000000	0.00000000	125216.82486369	-73.66088712
4.750	30.29107895	-23.22267562	0.00000000	0.00000000	119266.75294371	-91.16921517
4.750	30.29109955	-23.22269141	0.00000000	0.00000000	119266.83404513	-91.16921517
4.773	28.71007730	-22.01059966	0.00000000	0.00000000	113041.78705255	-106.44731709
4.781	28.11205294	-21.55212389	0.00000000	0.00000000	110687.15240706	-111.68291870
4.781	30.26330356	-24.04734122	0.00000000	0.00000000	110686.93264143	-111.68291870
4.800	28.57614223	-22.70671613	0.00000000	0.00000000	104516.20141070	-124.16251406
4.800	28.57599863	-22.70660202	0.00000000	0.00000000	104515.67619849	-124.16251406
4.822	26.37323140	-20.95627447	0.00000000	0.00000000	96459.13569858	-140.92870967
4.850	23.27218371	-18.49216966	0.00000000	0.00000000	85117.16644406	-158.96755709
4.850	23.27220411	-18.49218587	0.00000000	0.00000000	85117.24105722	-158.96755709
4.872	20.56793158	-16.34336016	0.00000000	0.00000000	75226.46250916	-173.17104512
4.900	16.70999429	-13.27782787	0.00000000	0.00000000	61116.19704954	-191.62042979
4.900	16.70989193	-13.27774653	0.00000000	0.00000000	61115.82264856	-191.62042979
4.921	13.28067599	-10.63412451	0.00000000	0.00000000	49634.30164278	-204.16199600
4.950	8.76105870	-7.01516919	0.00000000	0.00000000	32742.98918606	-223.02191791
4.950	8.76106861	-7.01517713	0.00000000	0.00000000	32743.02622148	-223.02191791
4.960	7.11529075	-5.69736720	0.00000000	0.00000000	26592.20718157	-229.50497544
4.960	7.11529074	-5.69736719	0.00000000	0.00000000	26592.20715252	-229.50497544
4.961	7.00874191	-5.61205124	0.00000000	0.00000000	26193.99872660	-229.91839140
4.965	6.24823392	-5.00309604	0.00000000	0.00000000	23351.72751625	-232.84790224
4.965	6.24823103	-5.00309373	0.00000000	0.00000000	23351.71673140	-232.84790224
4.979	3.90471494	-3.12658970	0.00000000	0.00000000	14593.21793488	-241.65200036
4.979	3.90470696	-3.12658332	0.00000000	0.00000000	14593.18811206	-241.65200036
4.992	1.45856010	-1.16790062	0.00000000	0.00000000	5451.12404211	-250.51184047
4.992	1.45855239	-1.16789445	0.00000000	0.00000000	5451.09521658	-250.51184047
5.000	0.00000000	0.00000000	0.00000000	0.00000000	-0.00000169	-255.52188502
5.000	-0.00727535	0.00582553	0.00000000	0.00000000	-27.19039419	-255.54599838

← Pier 11

* * * LRFD STRESS SUMMARY (Based on Input Section)* * *
STRESSES IN (ksi)
IMPACT INCLUDED

SPAN.LOC	TOP FLANGE	BOT FLANGE	TOP OF SLAB	TOP REINF	MOMENT(in-kips)	SHEAR(kips)
5.000	-0.00352900	0.00286598	0.00000000	0.00000000	-13.71437278	2.02658831
5.191	-0.00217766	0.00176853	0.00000000	0.00000000	-8.46281330	1.49507678
6.000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000

HNTB BRIDGE DESIGN PROGRAM BDGS VERSION 2.9.1.0 PAGE 110
RUN TIME: 05/13/2011 17:46:26.149 OUTPUT
Filename: M:\jobs\49633\Techprod\Bridges\Ramp A5\Design\BDGS\SteelDsn_Run_MOD_Final\CL Girder 1.OUT
LOAD COMBINATION 1 DC CONSTRUCTIBILITY
---LOAD FACTORS USED (IMPACT NOT INCLUDED IN FACTORS)---

NU FACTOR	1.0500000
A-DEAD LOADS	
GIRDER: SELF WEIGHT	1.5000000
GIRDER: USER DEFINED	1.5000000
SLAB+HAUNCH: SELF WEIGHT	1.5000000
SLAB+HAUNCH: USER DEFINED	1.5000000
REMOVABLE FORMS:	1.5000000
ADDITIONAL A-DEAD LOAD	1.5000000
A-DEAD LOAD SUPPORT SETTLEMENT	1.5000000
B-DEAD LOADS	
BARRIER	0.0000000
INTEGRAL WEARING SURFACE	0.0000000
FUTURE WEARING SURFACE	0.0000000
FORM REMOVAL	0.0000000
UTILITIES	0.0000000
ADDITIONAL B-DEAD LOAD	0.0000000
B-DEAD LOAD SUPPORT SETTLEMENT	0.0000000
B-DEAD LOAD SIDEWALK	0.0000000
LIVE LOADS	
AUXILIARY LIVE LOAD	0.0000000
MAXIMUM TRUCK MOMENT	0.0000000
MINIMUM TRUCK MOMENT	0.0000000
MAXIMUM TRUCK SHEAR	0.0000000
MINIMUM TRUCK SHEAR	0.0000000
DOUBLE TRUCK	0.0000000
MAXIMUM LANE MOMENT	0.0000000
MINIMUM LANE MOMENT	0.0000000
MAXIMUM LANE SHEAR	0.0000000
MINIMUM LANE SHEAR	0.0000000
MAXIMUM FATIGUE MOMENT	0.0000000
MINIMUM FATIGUE MOMENT	0.0000000
MAXIMUM FATIGUE SHEAR	0.0000000
MINIMUM FATIGUE SHEAR	0.0000000
MAXIMUM PEDESTRIAN MOMENT	0.0000000
MINIMUM PEDESTRIAN MOMENT	0.0000000
MAXIMUM PEDESTRIAN SHEAR	0.0000000
MINIMUM PEDESTRIAN SHEAR	0.0000000

* * * LRFD STRESS SUMMARY (Based on Input Section)* * *
STRESSES IN (ksi)
IMPACT INCLUDED

SPAN.LOC	TOP FLANGE	BOT FLANGE	TOP OF SLAB	TOP REINF	MOMENT(in-kips)	SHEAR(kips)
0.000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
0.750	-0.00223357	0.00223357	0.00000000	0.00000000	-6.04816060	-1.37903819
1.000	-0.00403973	0.00403973	0.00000000	0.00000000	-10.93894621	-1.88537403

* * * LRFD STRESS SUMMARY (Based on Input Section)* * *
STRESSES IN (ksi)
IMPACT INCLUDED

SPAN.LOC	TOP FLANGE	BOT FLANGE	TOP OF SLAB	TOP REINF	MOMENT(in-kips)	SHEAR(kips)
1.000	-0.09165039	0.09165039	0.00000000	0.00000000	-177.97727873	139.73134349
1.001	0.00015749	-0.00015749	0.00000000	0.00000000	0.30583914	139.45079652
1.023	3.23129197	-3.23129197	0.00000000	0.00000000	6274.89459709	128.30950251
1.023	3.23393171	-3.23393171	0.00000000	0.00000000	6280.02075422	128.30950251
1.031	4.28613033	-4.28613033	0.00000000	0.00000000	8323.30112550	124.17488738
1.047	6.44438917	-6.44438917	0.00000000	0.00000000	12514.45651320	115.21950407
1.047	6.44450896	-6.44450896	0.00000000	0.00000000	12514.68912556	115.21950407
1.050	6.76038135	-6.76038135	0.00000000	0.00000000	13128.08649026	113.84978448
1.050	6.75986957	-6.75986957	0.00000000	0.00000000	13127.09264631	113.84978448
1.061	7.53510843	-7.53510843	0.00000000	0.00000000	15776.49722634	124.86949668
1.067	8.17387715	-8.17387715	0.00000000	0.00000000	17113.90770755	122.09949846
1.067	8.18617324	-8.18617324	0.00000000	0.00000000	17139.65242005	122.09949846
1.083	10.17365431	-10.17365431	0.00000000	0.00000000	21300.90502474	113.04739749
1.083	10.18340928	-10.18340928	0.00000000	0.00000000	21321.32931091	113.04739749
1.087	10.56201647	-10.56201647	0.00000000	0.00000000	22114.03128101	111.23954618
1.087	10.56392099	-10.56392099	0.00000000	0.00000000	22118.01884987	111.23954618

← Rear Abut.

HNTB BRIDGE DESIGN PROGRAM BDGS VERSION 2.9.1.0 PAGE 111
RUN TIME: 05/13/2011 17:46:26.149 OUTPUT
Filename: M:\jobs\49633\Techprod\Bridges\Ramp A5\Design\BDGS\SteelDsn_Run_MOD_Final\CL Girder 1.OUT
* * * LRFD STRESS SUMMARY (Based on Input Section)* * *
STRESSES IN (ksi)
IMPACT INCLUDED

SPAN.LOC	TOP FLANGE	BOT FLANGE	TOP OF SLAB	TOP REINF	MOMENT(in-kips)	SHEAR(kips)
1.088	10.68442551	-10.68442551	0.00000000	0.00000000	22370.32301148	110.68297784
1.100	11.98142461	-11.98142461	0.00000000	0.00000000	25085.89146590	104.21929058
1.100	11.98950240	-11.98950240	0.00000000	0.00000000	25102.80418152	104.21929058
1.114	13.42563355	-13.42563355	0.00000000	0.00000000	28182.15924509	41.75330048
1.141	14.35787681	-14.35787681	0.00000000	0.00000000	30139.05966170	27.64650511
1.150	14.58876702	-14.58876702	0.00000000	0.00000000	30623.72838851	22.72473664
1.150	14.59934309	-14.59934309	0.00000000	0.00000000	30645.92894575	22.72473664
1.167	14.93537931	-14.93537931	0.00000000	0.00000000	31351.31326488	-0.33377901
1.194	14.76092367	-14.76092367	0.00000000	0.00000000	30985.10807479	-14.44057394
1.200	14.65672188	-14.65672188	0.00000000	0.00000000	30766.37490690	-17.90014745
1.200	14.66799677	-14.66799677	0.00000000	0.00000000	30790.04236684	-17.90014745
1.220	14.23285768	-14.23285768	0.00000000	0.00000000	29876.62834384	-13.76309498
1.246	13.70244917	-13.70244917	0.00000000	0.00000000	28763.23157754	-27.86989007
1.250	13.60901432	-13.60901432	0.00000000	0.00000000	28567.09960382	-29.61511170
1.250	13.61076502	-13.61076502	0.00000000	0.00000000	28570.77455381	-29.61511170
1.250	13.59679607	-13.59679607	0.00000000	0.00000000	28541.45190994	-29.86726882
1.250	13.60597869	-13.60597869	0.00000000	0.00000000	28560.72741855	-29.86726882
1.273	12.81848476	-12.81848476	0.00000000	0.00000000	26907.67537434	-11.61051643
1.299	12.34080184	-12.34080184	0.00000000	0.00000000	25904.95646332	-25.71731075
1.300	12.31489832	-12.31489832	0.00000000	0.00000000	25850.58160218	-26.25249525
1.300	12.32372344	-12.32372344	0.00000000	0.00000000	25869.10668095	-26.25249525
1.325	11.50569961	-11.50569961	0.00000000	0.00000000	24151.96751289	-2.39470532
1.350	11.28514109	-11.28514109	0.00000000	0.00000000	23688.98633794	-15.57449057
1.350	11.29411527	-11.29411527	0.00000000	0.00000000	23707.82432449	-15.57449057
1.352	11.27260433	-11.27260433	0.00000000	0.00000000	23662.67004790	-16.50149984
1.378	10.66335329	-10.66335329	0.00000000	0.00000000	22383.77182964	8.52698313
1.400	10.72158710	-10.72158710	0.00000000	0.00000000	22506.01219878	-3.19060805
1.400	10.72690583	-10.72690583	0.00000000	0.00000000	22517.17692250	-3.19060805
1.404	10.70990754	-10.70990754	0.00000000	0.00000000	22481.49528575	-5.57981223
1.431	10.38018847	-10.38018847	0.00000000	0.00000000	21789.37250009	17.30581672

1.450	10.61281341	-10.61281341	0.00000000	0.00000000	22277.68266675	7.05042138
1.450	10.61459819	-10.61459819	0.00000000	0.00000000	22281.42914255	7.05042138
1.457	10.64944300	-10.64944300	0.00000000	0.00000000	22354.57294777	3.19902230
1.484	10.54394334	-10.54394334	0.00000000	0.00000000	22133.11571992	19.65538823
1.500	10.79385900	-10.79385900	0.00000000	0.00000000	22657.72135095	10.86218695
1.500	10.79257699	-10.79257699	0.00000000	0.00000000	22655.03025623	10.86218695
1.510	10.86719386	-10.86719386	0.00000000	0.00000000	22811.66082633	5.54859434
1.536	10.82027152	-10.82027152	0.00000000	0.00000000	22710.38957933	7.94845889
1.537	10.82766517	-10.82766517	0.00000000	0.00000000	22725.90791901	7.43237313
1.537	10.82749592	-10.82749592	0.00000000	0.00000000	22725.55269141	7.43237313
1.537	10.82915120	-10.82915120	0.00000000	0.00000000	22729.02690562	7.31184423
1.537	8.35915693	-8.35915693	0.00000000	0.00000000	22714.14809006	7.31184423
1.550	8.39737550	-8.39737550	0.00000000	0.00000000	22817.99854626	0.62530150
1.550	8.39737550	-8.39737550	0.00000000	0.00000000	22817.99854626	0.62530150
1.563	8.37049608	-8.37049608	0.00000000	0.00000000	22744.95970484	-6.13393962
1.589	8.09394855	-8.09394855	0.00000000	0.00000000	21993.50336623	-13.04389316
1.597	8.00456086	-8.00456086	0.00000000	0.00000000	21750.61222212	-17.12748281
1.597	8.00456086	-8.00456086	0.00000000	0.00000000	21750.61222212	-17.12748281
1.599	7.96866173	-7.96866173	0.00000000	0.00000000	21653.06432259	-18.51475199
1.599	7.96866173	-7.96866173	0.00000000	0.00000000	21653.06432259	-18.51475199
1.600	7.95942539	-7.95942539	0.00000000	0.00000000	21627.96663706	-18.85509555
1.600	7.95942539	-7.95942539	0.00000000	0.00000000	21627.96663706	-18.85509555
1.601	7.94223051	-7.94223051	0.00000000	0.00000000	21581.24338100	-19.47277898
1.601	7.94223051	-7.94223051	0.00000000	0.00000000	21581.24338101	-19.47277898
1.602	7.92996755	-7.92996755	0.00000000	0.00000000	21547.92149781	-19.90152643
1.602	7.92996755	-7.92996755	0.00000000	0.00000000	21547.92149780	-19.90152643
1.603	7.91447546	-7.91447546	0.00000000	0.00000000	21505.82520130	-20.43024432
1.603	7.91447546	-7.91447546	0.00000000	0.00000000	21505.82520130	-20.43024432
1.606	7.85903987	-7.85903987	0.00000000	0.00000000	21355.19132075	-22.21879135
1.606	7.85903987	-7.85903987	0.00000000	0.00000000	21355.19132075	-22.21879135
1.623	7.51720527	-7.51720527	0.00000000	0.00000000	20426.33189267	-31.03740958
1.650	6.72480236	-6.72480236	0.00000000	0.00000000	18273.15339862	-45.25987119
1.650	6.72480236	-6.72480236	0.00000000	0.00000000	18273.15339862	-45.25987119
1.657	6.47833496	-6.47833496	0.00000000	0.00000000	17603.43308781	-68.26663137
1.685	4.88002010	-4.88002010	0.00000000	0.00000000	13260.36826463	-82.69340686
1.685	4.55739241	-4.12022695	0.00000000	0.00000000	13260.36826463	-82.69340686

HNTB BRIDGE DESIGN PROGRAM BDGS VERSION 2.9.1.0 PAGE 112
RUN TIME: 05/13/2011 17:46:26.149 OUTPUT
Filename: M:\jobs\49633\Techprod\Bridges\Ramp A5\Design\BDGS\SteelDsn_Run_MOD_Final\CL Girder 1.OUT
* * * LRFD STRESS SUMMARY (Based on Input Section)* * *
STRESSES IN (ksi)
IMPACT INCLUDED

SPAN.LOC	TOP FLANGE	BOT FLANGE	TOP OF SLAB	TOP REINF	MOMENT(in-kips)	SHEAR(kips)
1.691	4.14689515	-3.74910642	0.00000000	0.00000000	12065.96926848	-86.28080993
1.700	3.59027559	-3.24588030	0.00000000	0.00000000	10446.40712473	-90.91425689
1.700	3.59027559	-3.24588030	0.00000000	0.00000000	10446.40712473	-90.91425689
1.726	1.79965244	-1.62702173	0.00000000	0.00000000	5236.33954602	-115.74096480
1.746	-0.00000001	0.00000001	0.00000000	0.00000000	-0.00002270	-126.62867846
1.750	-0.35075208	0.31710637	0.00000000	0.00000000	-1020.56203817	-128.63988063
1.750	-0.35075208	0.31710637	0.00000000	0.00000000	-1020.56203817	-128.63988063
1.760	-1.27377018	1.15158444	0.00000000	0.00000000	-3706.21181647	-133.78296321
1.794	-4.79074209	4.33119269	0.00000000	0.00000000	-13939.33167540	-154.47788602
1.800	-5.45874584	4.93511852	0.00000000	0.00000000	-15882.98165407	-157.58845053
1.800	-5.45874584	4.93511852	0.00000000	0.00000000	-15882.98165408	-157.58845053
1.828	-8.81611965	7.97043803	0.00000000	0.00000000	-25651.72859281	-172.33771944
1.850	-11.59191686	10.47996836	0.00000000	0.00000000	-33728.29736778	-183.59903085
1.850	-11.59191686	10.47996836	0.00000000	0.00000000	-33728.29736778	-183.59903085
1.857	-12.47026278	11.27405940	0.00000000	0.00000000	-36283.96719700	-187.01415324
1.857	-7.84267441	7.30301055	0.00000000	0.00000000	-36283.96719700	-187.01415324
1.863	-8.34624199	7.77192704	0.00000000	0.00000000	-38613.71195100	-196.13073415
1.897	-11.53046526	10.73704007	0.00000000	0.00000000	-53345.45349602	-214.93874447
1.900	-11.83988544	11.02516868	0.00000000	0.00000000	-54776.97941027	-216.67484028
1.900	-11.83988544	11.02516868	0.00000000	0.00000000	-54776.97941027	-216.67484028
1.931	-15.00631135	13.97370902	0.00000000	0.00000000	-69426.38190983	-230.34969635
1.950	-17.01989875	15.84873904	0.00000000	0.00000000	-78742.20139054	-240.64106699
1.950	-17.01989875	15.84873904	0.00000000	0.00000000	-78742.20139054	-240.64106699
1.966	-18.74104000	17.45144649	0.00000000	0.00000000	-86705.02494024	-249.08054659
2.000	-22.76686582	21.20025039	0.00000000	0.00000000	-105330.42290729	-267.71928464

← Pier 1

* * * LRFD STRESS SUMMARY (Based on Input Section)* * *
STRESSES IN (ksi)
IMPACT INCLUDED

SPAN.LOC	TOP FLANGE	BOT FLANGE	TOP OF SLAB	TOP REINF	MOMENT(in-kips)	SHEAR(kips)
2.000	-22.76725443	21.20061227	0.00000000	0.00000000	-105332.22081589	225.47705437
2.034	-19.38639659	18.05239533	0.00000000	0.00000000	-89690.75358557	208.55364514
2.050	-17.87271023	16.64286754	0.00000000	0.00000000	-82687.71564449	200.54284093
2.050	-17.87271023	16.64286754	0.00000000	0.00000000	-82687.71564449	200.54284093
2.068	-16.27556252	15.15562148	0.00000000	0.00000000	-75298.54556755	205.04765811
2.100	-13.35873675	12.43950600	0.00000000	0.00000000	-61803.91285621	189.11940591
2.100	-13.35873675	12.43950600	0.00000000	0.00000000	-61803.91285621	189.11940591
2.110	-12.48655154	11.62733691	0.00000000	0.00000000	-57768.76645454	184.10432371
2.141	-9.97832661	9.29170595	0.00000000	0.00000000	-46164.51687843	168.89933945
2.141	-15.86606154	14.34411796	0.00000000	0.00000000	-46164.51687843	168.89933945
2.150	-14.77966064	13.36192950	0.00000000	0.00000000	-43003.48208920	164.83708603
2.150	-14.77966064	13.36192950	0.00000000	0.00000000	-43003.48208920	164.83708603
2.153	-14.48140611	13.09228487	0.00000000	0.00000000	-42135.66897053	174.69133115
2.195	-9.37026172	8.47142431	0.00000000	0.00000000	-27264.08216612	155.45326915
2.200	-8.79690221	7.95306401	0.00000000	0.00000000	-25595.81277386	153.15303757
2.200	-8.79690221	7.95306401	0.00000000	0.00000000	-25595.81277386	153.15303757
2.237	-4.85523609	4.38950013	0.00000000	0.00000000	-14126.98595892	141.26796635
2.250	-3.56945720	3.22705890	0.00000000	0.00000000	-10385.83310772	135.55796323
2.250	-3.56945720	3.22705890	0.00000000	0.00000000	-10385.83310772	135.55796323
2.280	-0.77520456	0.70084347	0.00000000	0.00000000	-2255.56568069	122.27805691
2.288	0.00000005	-0.00000005	0.00000000	0.00000000	0.00014500	118.34209971
2.300	0.97479092	-0.88128462	0.00000000	0.00000000	2836.29002640	113.20696906
2.300	0.97479092	-0.88128462	0.00000000	0.00000000	2836.29002640	113.20696906
2.322	2.71639959	-2.45583040	0.00000000	0.00000000	7903.74313246	102.46201859
2.350	4.68377396	-4.23448541	0.00000000	0.00000000	13628.09298060	90.07853372
2.350	4.68377396	-4.23448541	0.00000000	0.00000000	13628.09298060	90.07853372
2.364	5.59864695	-5.06159970	0.00000000	0.00000000	16290.04343797	83.72025915
2.400	7.57257521	-6.84617993	0.00000000	0.00000000	22033.46275369	68.07306583
2.400	7.57257521	-6.84617993	0.00000000	0.00000000	22033.46275369	68.07306583
2.407	7.90483191	-7.14656509	0.00000000	0.00000000	23000.20994087	53.58728935
2.423	8.50721350	-7.69116354	0.00000000	0.00000000	24752.92310210	46.37418954
2.423	9.10945758	-9.10945758	0.00000000	0.00000000	24752.92310210	46.37418954
2.449	9.93633459	-9.93633459	0.00000000	0.00000000	26999.77730023	35.29556679
2.450	9.95962058	-9.95962058	0.00000000	0.00000000	27063.05177834	34.93357012

HNTB BRIDGE DESIGN PROGRAM BDGS VERSION 2.9.1.0 PAGE 113
RUN TIME: 05/13/2011 17:46:26.149 OUTPUT
Filename: M:\jobs\49633\Techprod\Bridges\Ramp A5\Design\BDGS\SteelDsn_Run_MOD_Final\CL Girder 1.OUT

* * * LRFD STRESS SUMMARY (Based on Input Section)* * *
STRESSES IN (ksi)
IMPACT INCLUDED

SPAN.LOC	TOP FLANGE	BOT FLANGE	TOP OF SLAB	TOP REINF	MOMENT(in-kips)	SHEAR(kips)
2.450	9.95962058	-9.95962058	0.00000000	0.00000000	27063.05177834	34.93357012
2.492	10.80089885	-10.80089885	0.00000000	0.00000000	29349.03820482	34.96910782
2.500	11.02087790	-11.02087790	0.00000000	0.00000000	29946.78230140	31.37619627
2.500	11.02087790	-11.02087790	0.00000000	0.00000000	29946.78230140	31.37619627
2.534	11.66302654	-11.66302654	0.00000000	0.00000000	31691.67827121	17.05419516
2.550	11.83520304	-11.83520304	0.00000000	0.00000000	32159.52958734	10.27905814
2.550	11.83520304	-11.83520304	0.00000000	0.00000000	32159.52958734	10.27905814
2.576	11.93212131	-11.93212131	0.00000000	0.00000000	32422.88341258	3.56136312
2.600	11.90619641	-11.90619641	0.00000000	0.00000000	32352.43825975	-6.34731169
2.600	11.90619641	-11.90619641	0.00000000	0.00000000	32352.43825975	-6.34731169
2.619	11.75697374	-11.75697374	0.00000000	0.00000000	31946.95887841	-14.10539782
2.650	11.25133520	-11.25133520	0.00000000	0.00000000	30572.99872626	-27.09892354
2.650	11.25133520	-11.25133520	0.00000000	0.00000000	30572.99872626	-27.09892354
2.661	10.99740490	-10.99740490	0.00000000	0.00000000	29882.99966019	-32.41240091
2.700	9.76392432	-9.76392432	0.00000000	0.00000000	26531.29075789	-48.44208985
2.700	9.76392432	-9.76392432	0.00000000	0.00000000	26531.29075789	-48.44208985
2.703	9.63358620	-9.63358620	0.00000000	0.00000000	26177.12593478	-49.83101178
2.746	7.69394843	-7.69394843	0.00000000	0.00000000	20906.59207541	-68.75151744
2.750	7.46313227	-7.46313227	0.00000000	0.00000000	20279.40055939	-70.47414696
2.750	7.46313227	-7.46313227	0.00000000	0.00000000	20279.40055939	-70.47414696
2.788	5.12934485	-5.12934485	0.00000000	0.00000000	13937.85277938	-85.92197347
2.800	4.30942480	-4.30942480	0.00000000	0.00000000	11709.90256767	-90.70746940
2.800	4.30942480	-4.30942480	0.00000000	0.00000000	11709.90256767	-90.70746940
2.831	1.99766547	-1.99766547	0.00000000	0.00000000	5428.21119512	-103.68146498
2.850	0.35677393	-0.35677393	0.00000000	0.00000000	969.45372423	-111.48113961
2.850	0.35677393	-0.35677393	0.00000000	0.00000000	969.45372423	-111.48113961
2.854	0.00000039	-0.00000039	0.00000000	0.00000000	0.00105835	-113.10258331
2.873	-1.72099965	1.72099965	0.00000000	0.00000000	-4676.43342772	-120.60377175
2.900	-4.39458740	4.39458740	0.00000000	0.00000000	-11941.31295934	-131.36893578
2.900	-4.39458740	4.39458740	0.00000000	0.00000000	-11941.31295934	-131.36893578
2.915	-5.99771987	5.99771987	0.00000000	0.00000000	-16297.46858698	-137.49664785
2.950	-9.92227719	9.92227719	0.00000000	0.00000000	-26961.57943887	-151.17861359
2.950	-9.92227719	9.92227719	0.00000000	0.00000000	-26961.57943887	-151.17861359
2.958	-10.83348375	10.83348375	0.00000000	0.00000000	-29437.58042698	-154.17080339
3.000	-16.22005698	16.22005698	0.00000000	0.00000000	-44074.39405520	-170.72088348 ← Pier 2

* * * LRFD STRESS SUMMARY (Based on Input Section)* * *
STRESSES IN (ksi)
IMPACT INCLUDED

SPAN.LOC	TOP FLANGE	BOT FLANGE	TOP OF SLAB	TOP REINF	MOMENT(in-kips)	SHEAR(kips)
3.000	-16.20674386	16.20674386	0.00000000	0.00000000	-44038.21859754	141.89536856
3.008	-15.27116538	15.27116538	0.00000000	0.00000000	-41495.99236573	138.58039658
3.017	-14.35768562	14.35768562	0.00000000	0.00000000	-39013.81445670	135.27044714
3.025	-13.46627105	13.46627105	0.00000000	0.00000000	-36591.59382170	131.96552025
3.033	-12.59688818	12.59688818	0.00000000	0.00000000	-34229.23941203	128.66561590
3.042	-11.75768538	11.75768538	0.00000000	0.00000000	-31948.89261096	125.40293713
3.042	-11.74950350	11.74950350	0.00000000	0.00000000	-31926.66017898	125.37073410
3.042	-11.73249291	11.73249291	0.00000000	0.00000000	-31880.43768165	125.30375719
3.042	-12.12442149	12.12442149	0.00000000	0.00000000	-31872.85487769	125.30375719
3.042	-12.07477324	12.07477324	0.00000000	0.00000000	-31742.33884272	125.11447339
3.042	-12.07484936	12.07484936	0.00000000	0.00000000	-31742.53895809	125.11447339
3.050	-11.30024373	11.30024373	0.00000000	0.00000000	-29706.24444813	122.12077452
3.050	-11.30031584	11.30031584	0.00000000	0.00000000	-29706.43402406	122.12077452
3.050	-11.28904505	11.28904505	0.00000000	0.00000000	-29676.80520069	122.07633694
3.058	-10.45874552	10.45874552	0.00000000	0.00000000	-27494.10176497	118.77752303
3.067	-9.65120668	9.65120668	0.00000000	0.00000000	-25371.23194728	115.47448366
3.075	-8.86645637	8.86645637	0.00000000	0.00000000	-23308.26897315	112.16721884
3.083	-8.12118637	8.12118637	0.00000000	0.00000000	-21343.63408004	105.66845715
3.084	-8.10695026	8.10695026	0.00000000	0.00000000	-21306.21956198	105.60363701
3.092	-7.38999896	7.38999896	0.00000000	0.00000000	-19421.96945012	102.28792129
3.100	-6.71431181	6.71431181	0.00000000	0.00000000	-17646.16743263	99.05753797
3.100	-6.71432792	6.71432792	0.00000000	0.00000000	-17646.20975671	99.05753797
3.100	-6.69593226	6.69593226	0.00000000	0.00000000	-17597.86334187	98.96798026
3.109	-6.02477743	6.02477743	0.00000000	0.00000000	-15833.97290250	95.64411347

HNTB BRIDGE DESIGN PROGRAM BDGS VERSION 2.9.1.0 PAGE 114
RUN TIME: 05/13/2011 17:46:26.149 OUTPUT
Filename: M:\jobs\49633\Techprod\Bridges\Ramp A5\Design\BDGS\SteelDsn_Run_MOD_Final\CL Girder 1.OUT

* * * LRFD STRESS SUMMARY (Based on Input Section)* * *
STRESSES IN (ksi)
IMPACT INCLUDED

SPAN.LOC	TOP FLANGE	BOT FLANGE	TOP OF SLAB	TOP REINF	MOMENT(in-kips)	SHEAR(kips)
3.117	-5.37656087	5.37656087	0.00000000	0.00000000	-14130.36747978	92.31659408
3.125	-4.75130789	4.75130789	0.00000000	0.00000000	-12487.11364328	88.98542212
3.134	-4.14903777	4.14903777	0.00000000	0.00000000	-10904.26200286	85.65059756
3.138	-3.82815715	3.82815715	0.00000000	0.00000000	-10060.94205535	83.81818486
3.138	-2.98327947	2.84986726	0.00000000	0.00000000	-10060.97727862	83.81818486
3.142	-2.78200607	2.65759481	0.00000000	0.00000000	-9382.19171061	82.24701094
3.150	-2.36640688	2.26058120	0.00000000	0.00000000	-7980.60191042	78.90157032
3.150	-2.36641697	2.26059085	0.00000000	0.00000000	-7980.63595190	78.90157032
3.150	-2.34929184	2.24423154	0.00000000	0.00000000	-7922.88219049	78.76051061
3.159	-1.93532720	1.84877940	0.00000000	0.00000000	-6526.80488549	75.27056352
3.167	-1.54011175	1.47123798	0.00000000	0.00000000	-5193.95835901	71.77735228
3.167	-1.61833607	1.53587140	0.00000000	0.00000000	-5193.57136586	110.81255607
3.190	-0.00000074	0.00000071	0.00000000	0.00000000	-0.00238618	99.44543706
3.194	0.29833735	-0.28313513	0.00000000	0.00000000	957.42555047	97.20491450
3.200	0.66827430	-0.63422141	0.00000000	0.00000000	2144.62888183	94.35283616
3.200	0.66827241	-0.63421961	0.00000000	0.00000000	2144.62280832	94.35283616
3.209	1.21004038	-1.14838101	0.00000000	0.00000000	3883.26700085	90.01300670
3.250	3.43672679	-3.26160336	0.00000000	0.00000000	11029.15899155	69.38213749
3.250	3.43671698	-3.26159405	0.00000000	0.00000000	11029.12749960	69.38213749
3.250	3.45253201	-3.27660320	0.00000000	0.00000000	11079.88116849	69.21346201
3.292	5.10914943	-4.84880526	0.00000000	0.00000000	16396.30519662	48.41391734
3.300	5.36072135	-5.08755797	0.00000000	0.00000000	17203.65093254	44.41143887
3.300	5.36071313	-5.08755017	0.00000000	0.00000000	17203.62457307	44.41143887
3.305	5.51294187	-5.23202188	0.00000000	0.00000000	17692.15776867	35.66184965
3.334	6.06191441	-5.75302071	0.00000000	0.00000000	19453.92287474	21.47208084
3.350	6.25435333	-5.93565363	0.00000000	0.00000000	20071.49874682	13.29844842
3.350	6.25436207	-5.93566192	0.00000000	0.00000000	20071.52677350	13.29844842
3.374	6.37320411	-6.04844820	0.00000000	0.00000000	20452.91519682	1.15764302

3.375	6.37380526	-6.04901871	0.00000000	0.00000000	20454.84439779	0.67253623
3.377	6.37410964	-6.04930759	0.00000000	0.00000000	20455.82123681	-0.00000002
3.400	6.28185767	-5.96175644	0.00000000	0.00000000	20159.76577851	-11.67225013
3.400	6.28184830	-5.96174756	0.00000000	0.00000000	20159.73572937	-11.67225013
3.417	6.09978217	-5.78895887	0.00000000	0.00000000	19575.44827362	-20.12700835
3.443	5.62111141	-5.33467947	0.00000000	0.00000000	18039.29587179	-43.21317102
3.450	5.42084554	-5.14461844	0.00000000	0.00000000	17396.60173751	-46.50955611
3.450	5.42085355	-5.14462605	0.00000000	0.00000000	17396.62745530	-46.50955611
3.459	5.13864501	-4.87679785	0.00000000	0.00000000	16490.96253939	-50.79316038
3.500	3.42587921	-3.25130853	0.00000000	0.00000000	10994.34686774	-71.48025459
3.500	3.42588949	-3.25131829	0.00000000	0.00000000	10994.37985180	-71.48025459
3.500	3.41499775	-3.24098156	0.00000000	0.00000000	10959.42604758	-71.59270491
3.512	2.79579165	-2.65332800	0.00000000	0.00000000	8972.26704921	-77.71737832
3.542	1.10547079	-1.04913991	0.00000000	0.00000000	3547.68179418	-92.39224943
3.550	0.58648527	-0.55660006	0.00000000	0.00000000	1882.15116536	-96.45095304
3.550	0.58648588	-0.55660064	0.00000000	0.00000000	1882.15312130	-96.45095304
3.559	0.00000503	-0.00000477	0.00000000	0.00000000	0.01613714	-100.84109410
3.582	-1.56238167	1.49251199	0.00000000	0.00000000	-5269.06265886	-121.44552398
3.584	-1.71481402	1.63812757	0.00000000	0.00000000	-5783.13399333	-122.41573234
3.600	-3.05676231	2.92006395	0.00000000	0.00000000	-10308.79487888	-130.64558987
3.600	-3.05673230	2.92002660	0.00000000	0.00000000	-10308.66300995	-130.64558987
3.623	-5.11408617	4.88538433	0.00000000	0.00000000	-17247.02809050	-142.34208950
3.625	-5.27473020	5.03884435	0.00000000	0.00000000	-17788.79290686	-143.21527682
3.641	-6.73837272	6.43703281	0.00000000	0.00000000	-22724.86220943	-150.93753511
3.641	-4.04416662	3.76016839	0.00000000	0.00000000	-22724.75692857	-150.93753511
3.650	-4.59965121	4.27664454	0.00000000	0.00000000	-25846.10515888	-156.06938201
3.650	-4.59963062	4.27662540	0.00000000	0.00000000	-25845.98946748	-156.06938201
3.665	-5.54435920	5.15501120	0.00000000	0.00000000	-31154.55593365	-171.35404226
3.667	-5.64741366	5.25082875	0.00000000	0.00000000	-31733.63384965	-172.20537302
3.700	-7.97114587	7.41137880	0.00000000	0.00000000	-44791.02111240	-190.38239851
3.700	-7.97105987	7.41129885	0.00000000	0.00000000	-44790.53789835	-190.38239851
3.707	-8.49885238	7.90202757	0.00000000	0.00000000	-47756.28031391	-194.27424522
3.708	-8.60099298	7.99699543	0.00000000	0.00000000	-48330.22309576	-195.01915995
3.749	-11.82375035	10.99343735	0.00000000	0.00000000	-66439.36265414	-216.84880388
3.750	-11.91207080	11.07555557	0.00000000	0.00000000	-66935.64802355	-217.42563254
3.750	-11.91206878	11.07555369	0.00000000	0.00000000	-66935.63666601	-217.42563254
3.750	-11.92144670	11.08427306	0.00000000	0.00000000	-66988.33258423	-217.48730259
3.791	-15.51352957	14.42410491	0.00000000	0.00000000	-87172.76555419	-239.76900763

HNTB BRIDGE DESIGN PROGRAM BDGS VERSION 2.9.1.0 PAGE 115
RUN TIME: 05/13/2011 17:46:26.149 OUTPUT
Filename: M:\jobs\49633\Techprod\Bridges\Ramp A5\Design\BDGS\SteelDsn_Run_MOD_Final\CL Girder 1.OUT

* * * LRFD STRESS SUMMARY (Based on Input Section)* * *
STRESSES IN (ksi)
IMPACT INCLUDED

SPAN.LOC	TOP FLANGE	BOT FLANGE	TOP OF SLAB	TOP REINF	MOMENT(in-kips)	SHEAR(kips)
3.792	-15.60356539	14.50781803	0.00000000	0.00000000	-87678.68980947	-240.30108950
3.800	-16.37553692	15.22557851	0.00000000	0.00000000	-92016.50946313	-244.81451084
3.800	-16.37541572	15.22546582	0.00000000	0.00000000	-92015.82841195	-244.81451084
3.833	-19.57367533	18.19913032	0.00000000	0.00000000	-109987.31170500	-259.77061252
3.833	-19.65170777	18.27168300	0.00000000	0.00000000	-110425.78725332	-260.19627755
3.834	-19.72505534	18.33987980	0.00000000	0.00000000	-110837.93787431	-260.59573568
3.834	-12.80259678	11.76179253	0.00000000	0.00000000	-110837.71770660	-260.59573568
3.850	-13.85830206	12.73167284	0.00000000	0.00000000	-119977.42320446	-270.33676709
3.850	-13.85822839	12.73160516	0.00000000	0.00000000	-119976.78542399	-270.33676709
3.874	-15.56297304	14.29776031	0.00000000	0.00000000	-134735.51051639	-285.36584860
3.875	-15.60463153	14.33603212	0.00000000	0.00000000	-135096.16640635	-285.72374910
3.900	-17.43931252	16.02156026	0.00000000	0.00000000	-150979.80760905	-301.04159472
3.900	-17.43919233	16.02144984	0.00000000	0.00000000	-150978.76705416	-301.04159472
3.916	-18.69102671	17.17151466	0.00000000	0.00000000	-161816.44829396	-302.37773758
3.917	-18.72045016	17.19854610	0.00000000	0.00000000	-162071.18012613	-302.61633863
3.950	-21.33186892	19.59766607	0.00000000	0.00000000	-184679.38219174	-323.06317825
3.950	-21.33179261	19.59759596	0.00000000	0.00000000	-184678.72146638	-323.06317825
3.958	-21.99776141	20.20930450	0.00000000	0.00000000	-190443.18114843	-328.07287172
3.958	-22.01350552	20.22388811	0.00000000	0.00000000	-190580.61032183	-328.19217225
4.000	-25.57366876	23.49462311	0.00000000	0.00000000	-221402.51111953	-353.76800586 ← Pier 3

* * * LRFD STRESS SUMMARY (Based on Input Section)* * *
STRESSES IN (ksi)
IMPACT INCLUDED

SPAN.LOC	TOP FLANGE	BOT FLANGE	TOP OF SLAB	TOP REINF	MOMENT(in-kips)	SHEAR(kips)
4.000	-25.57366575	23.49462035	0.00000000	0.00000000	-221402.48544541	452.88466246
4.034	-20.95743237	19.25366985	0.00000000	0.00000000	-181437.72040393	427.18952974
4.050	-18.92685197	17.38816820	0.00000000	0.00000000	-163858.09168803	415.38321510
4.050	-18.92671996	17.38804692	0.00000000	0.00000000	-163856.94883213	415.38321510
4.069	-16.61069788	15.26030895	0.00000000	0.00000000	-143806.12560180	412.93471765
4.100	-12.74385852	11.70782948	0.00000000	0.00000000	-110329.19464894	389.32208838
4.100	-12.74379879	11.70777460	0.00000000	0.00000000	-110328.67749703	389.32208838
4.103	-12.41366002	11.40447491	0.00000000	0.00000000	-107470.52082809	387.23958358
4.113	-11.19386544	10.28384516	0.00000000	0.00000000	-96910.22204834	379.44538790
4.113	-17.24631043	16.03520268	0.00000000	0.00000000	-96909.51174092	379.44538790
4.137	-13.06369117	12.14630436	0.00000000	0.00000000	-73406.76936724	371.59507802
4.150	-10.81745368	10.05780703	0.00000000	0.00000000	-60784.83617996	362.92138638
4.150	-10.81742714	10.05778235	0.00000000	0.00000000	-60784.68702965	362.92138638
4.171	-7.24305658	6.73441898	0.00000000	0.00000000	-40699.78209337	348.67487435
4.200	-2.65121836	2.46503876	0.00000000	0.00000000	-14897.57924599	329.46988520
4.200	-2.65116875	2.46499264	0.00000000	0.00000000	-14897.30049582	329.46988520
4.206	-1.79289156	1.66698724	0.00000000	0.00000000	-10074.51687596	328.40279508
4.217	-0.00000926	0.00000861	0.00000000	0.00000000	-0.05204031	320.56706728
4.226	1.35892935	-1.26349967	0.00000000	0.00000000	7636.02049063	314.49786598
4.226	1.46680721	-1.14709107	0.00000000	0.00000000	7635.96166550	314.49786598
4.240	3.59359780	-2.81031069	0.00000000	0.00000000	18707.69040408	305.39824168
4.250	5.16013813	-4.03539632	0.00000000	0.00000000	26862.84662804	298.51838356
4.250	5.16011357	-4.03537711	0.00000000	0.00000000	26862.71877456	298.51838356
4.274	8.71949411	-6.81892878	0.00000000	0.00000000	45392.27955158	278.34689165
4.300	12.27908954	-9.60264850	0.00000000	0.00000000	63922.95904452	260.83719975
4.300	12.27903825	-9.60260839	0.00000000	0.00000000	63922.69204345	260.83719975
4.308	13.37340091	-10.45843568	0.00000000	0.00000000	69619.76745958	255.21223710
4.343	18.05202783	-14.00442488	0.00000000	0.00000000	91746.54927322	219.93692815
4.350	18.89257743	-14.65650751	0.00000000	0.00000000	96018.50841829	214.93205777
4.350	18.89258202	-14.65651107	0.00000000	0.00000000	96018.53173215	214.93205777
4.394	23.48926975	-18.22253526	0.00000000	0.00000000	119380.46323391	185.18445731
4.400	24.05759940	-18.66343475	0.00000000	0.00000000	122268.90791526	181.16757014
4.400	24.05747077	-18.66333496	0.00000000	0.00000000	122268.25416283	181.16757014
4.446	27.99342275	-21.71677274	0.00000000	0.00000000	142272.10165114	133.32478671
4.450	28.30179624	-21.95600312	0.00000000	0.00000000	143839.36069481	130.29588275
4.450	28.30180872	-21.95601280	0.00000000	0.00000000	143839.42412996	130.29588275
4.497	31.10574409	-24.13125331	0.00000000	0.00000000	158089.97797649	98.57231570

4.500	31.25952[illegible]	-24.25055402	0.00000000	0.00000000	158871.54724105	96.53139505
4.500	31.25935749	-24.25042371	0.00000000	0.00000000	158870.69355351	96.53139505

* * * LRFD STRESS SUMMARY (Based on Input Section)* * *
STRESSES IN (ksi)
IMPACT INCLUDED

SPAN.LOC	TOP FLANGE	BOT FLANGE	TOP OF SLAB	TOP REINF	MOMENT(in-kips)	SHEAR(kips)
4.548	33.28487687	-25.82178364	0.00000000	0.00000000	169165.07154521	44.40143131
4.550	33.32055987	-25.84946584	0.00000000	0.00000000	169346.42469521	43.34849398
4.550	33.32057359	-25.84947649	0.00000000	0.00000000	169346.49441228	43.34849398
4.600	34.01023850	-26.38450559	0.00000000	0.00000000	172851.60617010	9.64895810
4.600	34.01072094	-26.38487987	0.00000000	0.00000000	172854.05813406	9.58400618
4.600	34.01067931	-26.38484757	0.00000000	0.00000000	172853.84652085	9.58400618
4.614	34.04594516	-26.41220616	0.00000000	0.00000000	173033.07960857	0.00000000
4.650	33.82013584	-26.23702752	0.00000000	0.00000000	171885.43977901	-24.18048168
4.650	33.81991886	-26.23685919	0.00000000	0.00000000	171884.33701547	-24.18048168
4.651	33.80236709	-26.22324292	0.00000000	0.00000000	171795.13430065	-44.98399135
4.700	32.24473099	-25.01485802	0.00000000	0.00000000	163878.69748105	-77.82544578
4.700	32.24464467	-25.01479106	0.00000000	0.00000000	163878.25881464	-77.82544578
4.703	32.12818207	-24.92444156	0.00000000	0.00000000	163286.35622849	-79.73646144
4.750	29.77452296	-23.09851693	0.00000000	0.00000000	151324.25955564	-111.58993375
4.750	29.77424951	-23.09830479	0.00000000	0.00000000	151322.86979851	-111.58993375
4.754	29.52113378	-22.90194231	0.00000000	0.00000000	150036.44865126	-135.08178725
4.774	28.09027606	-21.79190971	0.00000000	0.00000000	142764.34277217	-148.16226497
4.774	28.09025757	-21.79189536	0.00000000	0.00000000	142764.24879275	-148.16226497
4.800	25.93277486	-20.11816071	0.00000000	0.00000000	131799.18742104	-165.94727744
4.800	25.93272332	-20.11812073	0.00000000	0.00000000	131798.92545884	-165.94727744
4.806	25.42852420	-19.72697250	0.00000000	0.00000000	129236.41395993	-169.83425977
4.850	21.16444964	-16.41898338	0.00000000	0.00000000	107564.93588850	-199.71176557
4.850	21.16423655	-16.41881806	0.00000000	0.00000000	107563.85285270	-199.71176557
4.857	20.40306666	-15.82831672	0.00000000	0.00000000	103695.32833292	-223.53375985
4.900	15.09275478	-11.70867629	0.00000000	0.00000000	76706.51618806	-252.42328125
4.900	15.09275143	-11.70867369	0.00000000	0.00000000	76706.49915749	-252.42328125
4.909	13.93632167	-10.81153716	0.00000000	0.00000000	70829.12956244	-258.28623286
4.950	8.06930660	-6.26001682	0.00000000	0.00000000	41010.96228310	-286.18776954
4.950	8.06922770	-6.25995561	0.00000000	0.00000000	41010.56127953	-286.18776954
4.960	6.29999038	-4.94831521	0.00000000	0.00000000	33221.81652034	-300.13158206
4.980	3.22608116	-2.53391918	0.00000000	0.00000000	17012.13331207	-313.58835597
5.000	0.01732224	-0.01360572	0.00000000	0.00000000	91.34556481	-327.04513401 ← Pier 11

* * * LRFD STRESS SUMMARY (Based on Input Section)* * *
STRESSES IN (ksi)
IMPACT INCLUDED

SPAN.LOC	TOP FLANGE	BOT FLANGE	TOP OF SLAB	TOP REINF	MOMENT(in-kips)	SHEAR(kips)
5.000	-0.00317130	0.00249642	0.00000000	0.00000000	-16.83236687	2.50156264
5.100	-0.00247931	0.00195169	0.00000000	0.00000000	-13.15945428	2.14833347
5.100	-0.00247931	0.00195169	0.00000000	0.00000000	-13.15945438	2.14833347
5.191	-0.00194536	0.00153137	0.00000000	0.00000000	-10.32539904	1.84862005
6.000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000

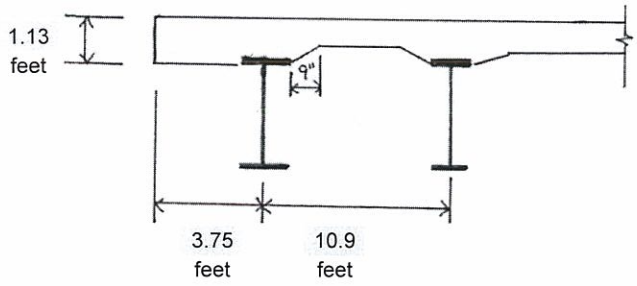
HNTB The HNTB Companies Engineers Architects Planners	Made	KDG	Date	7/7/2011	Job Number	49633
	Checked	LJD	Date	7/8/2011		
For **Cleveland Innerbelt**	Backchk'd	KDG	Date	7/15/2011	Sheet No.	

DONE PREVIOUSLY. NOTHING ON THIS WORKSHEET WILL CHANGE. LEAVE AS IS
LJD 3/30/12
EDG 4-2-12
LJD 4/3/12

Global Superstructure Distortion (ϕ_g)

Girder twist due to superstructure deformation can be neglected when the tributary deck load carrier by the facia girder does not exceed 110% carried by the interior member.

Span 1 Right Overhang G1 & G2



	Slab thickness =	9.25	inches
G1	Top Flange W =	20	inches
G1	Top Flange t =	0.88	inches
G2	Top Flange W =	20	inches
G2	Top Flange t =	0.88	inches
	Top of deck to top of Web =	14	inches

Interior

Slab =	1262	#/ft
Haunch =	80.7	#/ft
9" wedge =	44.5	#/ft
SIP (16psf)=	148	#/ft
Total=	1536	#/ft

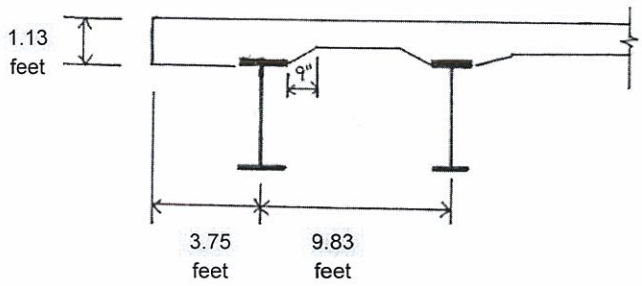
Exterior

Half Interior =	768	#/ft
Overhang =	492	#/ft
Conc. on Flange=	137	#/ft
Total=	1397	#/ft

Ratio Exterior to Interior = 0.91 < 1.1

OK - Neglect Distortion

Span 1 Leftt Overhang G5 & G4



	Slab thickness =	9.25	inches
G5	Top Flange W =	28	inches
G5	Top Flange t =	1.63	inches
G4	Top Flange W =	20	inches
G4	Top Flange t =	1.38	inches
	Top of deck to top of Web =	14	inches

Interior

Slab =	1137	#/ft
Haunch =	70.3	#/ft
9" wedge =	44.5	#/ft
SIP (16psf)=	131	#/ft
Total=	1382	#/ft

Exterior

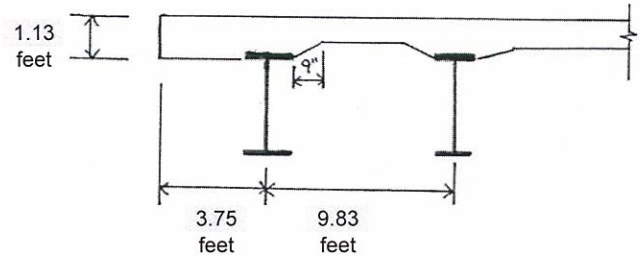
Half Interior =	691	#/ft
Overhang =	436	#/ft
Conc. on Flange=	180	#/ft
Total=	1308	#/ft

Ratio Exterior to Interior = 0.95 < 1.1

OK - Neglect Distortion

HNTB The HNTB Companies Engineers Architects Planners	Made	KDG	Date	7/7/2011	Job Number	49633
	Checked	LJD	Date	7/8/2011		
For **Cleveland Innerbelt**	Backchk'd	KDG	Date	7/15/2011	Sheet No.	

Span 4 Right Overhang G1 & G3



	Slab thickness =	9.25	inches
G1	Top Flange W =	28	inches
G1	Top Flange t =	1.5	inches
G3	Top Flange W =	22	inches
G3	Top Flange t =	1	inches
	Top of deck to top of Web =	14	inches

Interior

Slab =	1137	#/ft
Haunch =	85.9	#/ft
9" wedge =	44.5	#/ft
SIP (16psf)=	128	#/ft
Total=	1395	#/ft

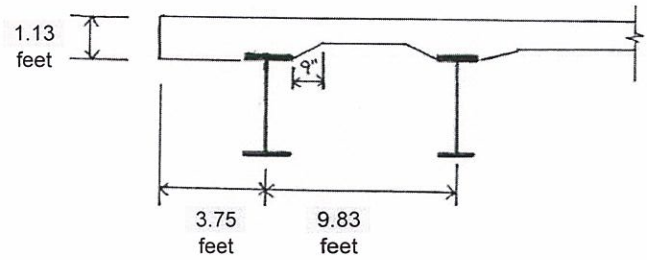
Exterior

Half Interior =	698	#/ft
Overhang =	436	#/ft
Conc. on Flange=	182	#/ft
Total=	1316	#/ft

Ratio Exterior to Interior = 0.94 < 1.1

OK - Neglect Distortion

Span 5 Leftt Overhang G5 & G4



	Slab thickness =	9.25	inches
G5	Top Flange W =	24	inches
G5	Top Flange t =	1.25	inches
G4	Top Flange W =	22	inches
G4	Top Flange t =	1	inches
	Top of deck to top of Web =	14	inches

Interior

Slab =	1137	#/ft
Haunch =	85.9	#/ft
9" wedge =	44.5	#/ft
SIP (16psf)=	128	#/ft
Total=	1395	#/ft

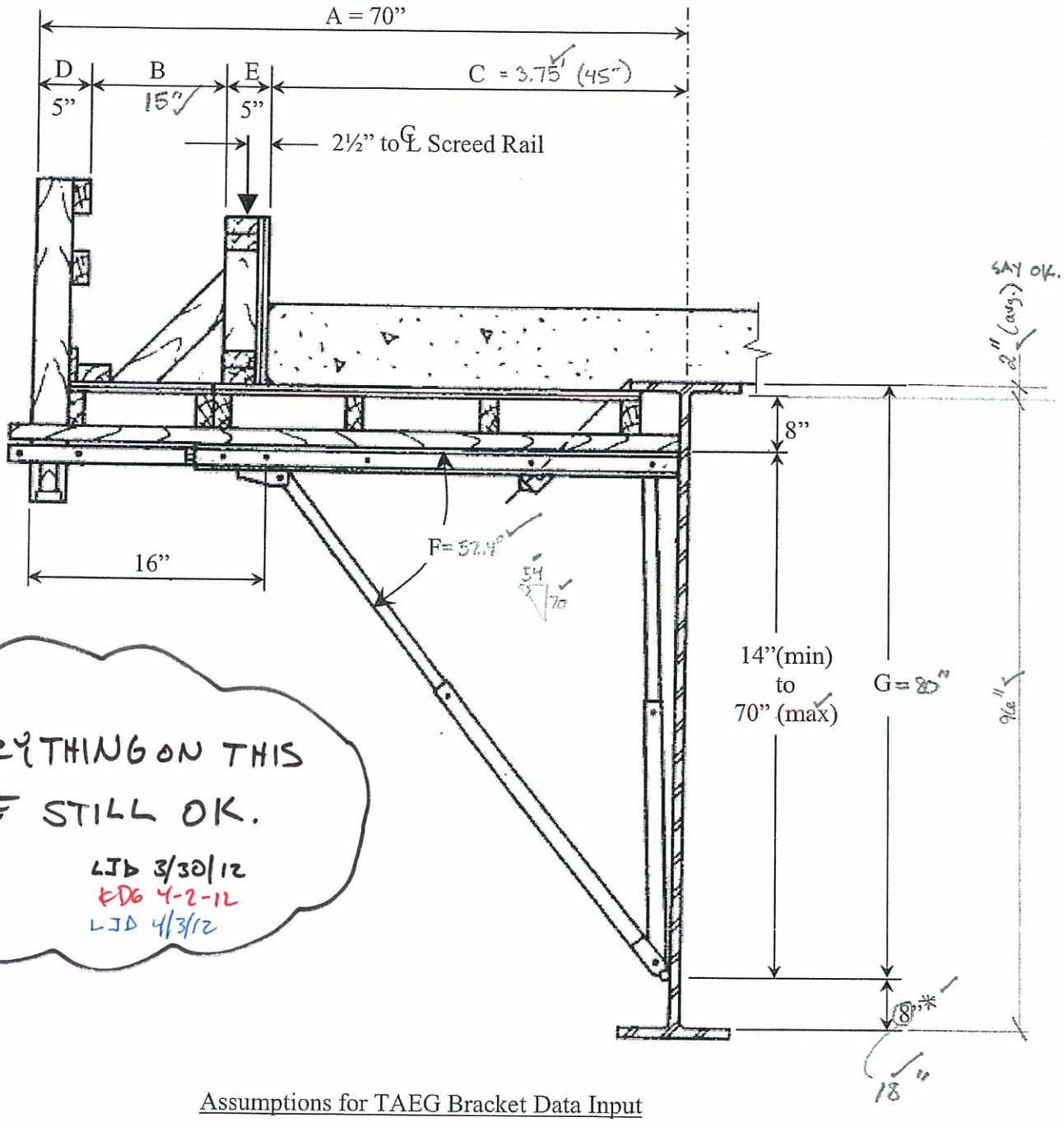
Exterior

Half Interior =	698	#/ft
Overhang =	464	#/ft
Conc. on Flange=	159	#/ft
Total=	1321	#/ft

Ratio Exterior to Interior = 0.95 < 1.1

OK - Neglect Distortion

CHK: DHE 02/18/2011
BV : LER 3/8/11



EVERYTHING ON THIS PAGE STILL OK.

LJD 3/30/12
EDG 4-2-12
LJD 4/3/12

Assumptions for TAEG Bracket Data Input

*Per CMS 508, bracket lower contact point must be within 8" of bottom of web. Since web depth > 86" this requirement cannot be met due to max. bracket height of 70". Provide note on plans removing requirement of CMS 508 such that the bracket location will be 3-17-9" per plan. (See BDM Sec 300)

CHK: DHE 02/18/2011
BV : LER 3/8/11

C. Permanent Lateral Support Data: <Use X-Frame w/ Strut Top & Bot> ✓

The default crossframe type assumed by the TAEG software consists of a stiffener and diagonal x-bracing with top and bottom horizontal chords. In order to analyze the structure with a standard ODOT crossframe, designers should input stiffener dimensions and select the "Diaphragms (Inputted Ix)" option. For ODOT Type 1 crossframes, designers should assume a fictitious stiffener of dimensions: 5" x 3/8". Determine the diaphragm moment of inertia for all standard ODOT crossframes as follows:

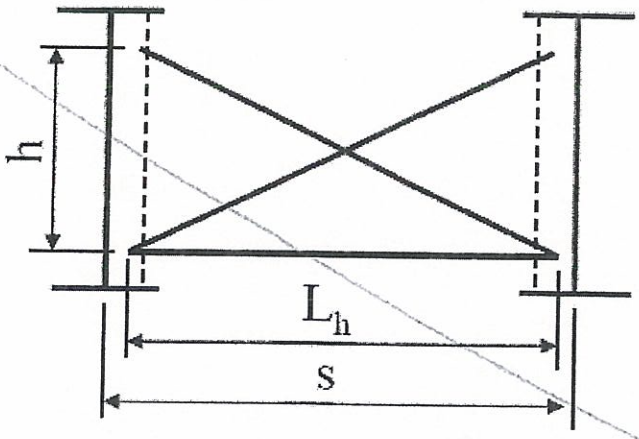
$$I_x = \frac{h^2 s}{4L_d^3\left(\frac{1}{A_d L_h^2} + \frac{L_h}{A_h L_d^3 + A_d L_h^3}\right)}$$

Where:

A_d = Area of the diagonal member (in^2)

A_h = Area of the horizontal member (in^2)

$L_d = \sqrt{L_h^2 + h^2}$



D. Temporary Lateral Support Data: <None> ✓

Designers should generally avoid utilizing temporary tie rods and timber blocks; however, if required these should be detailed in the contract plans.

E. Load Data:

1. Live Load on Walkway ..... 50 lb/ft²
2. Live Load on Slab ..... 50 lb/ft²
3. Dead Load of Formwork ..... 10 lb/ft²
4. Dead Load of Concrete ..... 150(t_{avg}) lb/ft² = 175
   (t_{avg} = Average thickness [ft.] of deck slab overhang) t_{oH} = 14" ✓
5. Wheel Spacing [1-2-3] ..... 36" – 31" – 36"
6. Maximum Wheel Load: (See Calc on next sheet) ✓ 48" - 40" - 48"

To estimate the total finishing machine length required for placement along the skew, add the rail-to-rail length and the extra end length from the following table using the plan specified skew rounded to the nearest 5 degrees. W is the rail-to-rail length as measured perpendicular to the centerline of the bridge.

WHEEL SPACING CHANGED.
LJD 3/30/12
KDG 4-2-12
LJD 4/3/12

1748

CHK: DHE 02/18/2011
B V': LER 3/18/11

Skew Angle	Rail-to-Rail Length, ft.	Extra End Length, ft.
0	1.00 W	0.0
15	1.04 W	5.0
20	1.06 W	5.5
25	1.10 W	6.5
30	1.15 W	7.0
35	1.22 W	8.0
40	1.31 W	9.0
45	1.41 W	10.5
50	1.56 W	11.5
55	1.74 W	13.5

For total machine lengths of 36 ft. and less, assume a total machine weight of 7.6 kip. Add 0.09 kip for each additional foot of machine length required above 36 ft. The maximum total machine length shall not exceed 120 ft. If greater lengths are required, consult the Office of Structural Engineering for recommendations.

To determine the maximum wheel load, divide the total machine weight by 8.0.

F. Bracket Data:

1. Refer to the following figure to determine TAEG dimensions A, B, C, D, E, F and G.
2. Designers may assume a center-to-center bracket spacing of 48.0 in.
3. Designers may assume a bracket weight of 50 lbs.

Max. Wheel Load

Case 1: Deck width = 49' ✓
W = 49'-5" ✓ → assume 25° skew ✓ ∴ add 6.5' ✓ + 1.10 ✓ (49.4167)
= 60.9' ✓
F_m = 7.6K + 0.09 (60.9 - 36)
= 9.8K ✓
F_w = 9.8/8 = 1.23 ✓ K/wheel ⟹ Say 1.25K ✓

Case 2: Deck width = 37' ✓
W = 37'-5" ✓ → assume 20° skew ∴ add 5.5 ✓ + 1.06 ✓ (37.4167)
= 45.2' ✓
F_m = 7.6K + 0.09 (45.2 - 36)
= 8.4 ✓
F_w = 8.4/8 = 1.1 K/wheel ✓

LJD 3/30/12
EDG 4.2.12
LJD 4/3/12
WHEEL LOAD NOW 2.25K PER WALSH RFI #00282.
1749

The Walsh Group
National Heavy / Civil

Project CLEVELAND INNERBELT BRIDGE

Subject BRIDGE MACHINE LOADS

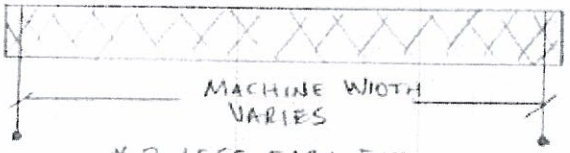
Date 4-8-2011

Name J. HALTERMAN

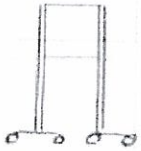
Sheet ____ of ____

Scale N/A

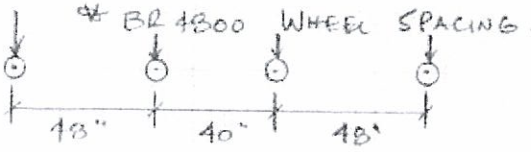
BIDWELL 4800 :



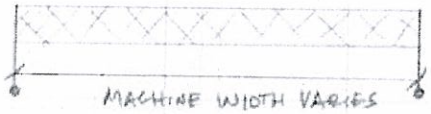
* 2 LEGS EACH END



* 2 WHEELS PER LEG SEE SPACING.



RAZORBACK 12 HED :



* 2 LEGS EACH END

* 1 WHEEL PER LEG SEE SPACING.