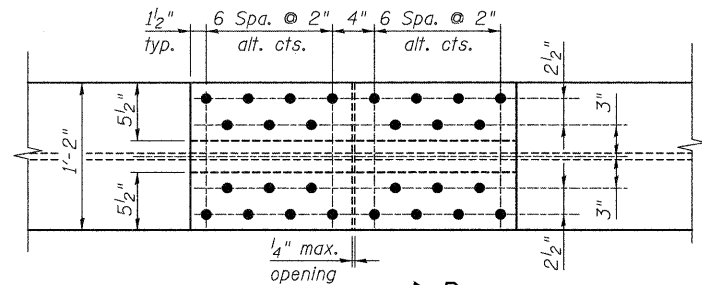
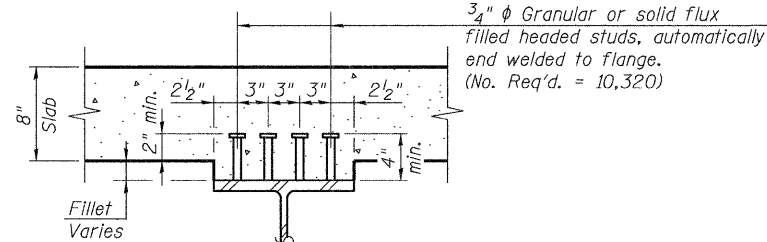


**BEAM ELEVATION**

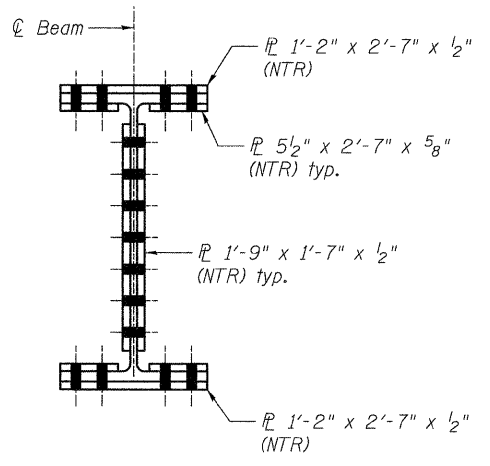


**SPICE DETAIL**

**NOTE:**  
Work this sheet with sheets S17 and S19 of S41.



**SECTION A-A**



**SECTION B-B**

INTERIOR GIRDER MOMENT TABLE				
		0.4 Sp. 1 0.6 Sp. 3	Pier 1 or 2	0.5 Span 2
$I_s$	(in <sup>4</sup> )	5660	5660	5660
$I_c(n)$	(in <sup>4</sup> )	16813	8105	16813
$I_c(3n)$	(in <sup>4</sup> )	12058	8105	12058
$I_c(cr)$	(in <sup>4</sup> )	-----	7920	-----
$S_s$	(in <sup>3</sup> )	414	414	414
$S_c(n)$	(in <sup>3</sup> )	638	744	638
$S_c(3n)$	(in <sup>3</sup> )	572	744	572
$S_c(cr)$	(in <sup>3</sup> )	-----	726	-----
DC1	(k/')	0.915	0.915	0.915
M <sub>DC1</sub>	(k)	41	169	123
DC2	(k/')	0.173	0.173	0.173
M <sub>DC2</sub>	(k)	8	32	23
DW	(k/')	0.333	0.333	0.333
M <sub>DW</sub>	(k)	15	62	44
M <sub>ℓ + IM</sub>	(k)	327	371	428
M <sub>u</sub> (Strength I)	(k)	656	994	998
φ <sub>r</sub> M <sub>n</sub>	(k)	3025	2562	3025
f <sub>s</sub> DC1	(ksi)	1.2	4.9	3.6
f <sub>s</sub> DC2	(ksi)	0.2	0.5	0.5
f <sub>s</sub> DW	(ksi)	0.3	1.0	0.9
f <sub>s</sub> (ℓ + IM)	(ksi)	6.1	6.1	8.0
f <sub>s</sub> (Service II)	(ksi)	9.7	14.4	15.4
0.95R <sub>h</sub> F <sub>yr</sub>	(ksi)	47.5	47.5	47.5
f <sub>s</sub> (Total)(Strength I)	(ksi)	-----	-----	-----
φ <sub>r</sub> F <sub>n</sub>	(ksi)	-----	-----	-----
V <sub>r</sub>	(k)	34.4	44.1	34.1

INTERIOR GIRDER REACTION TABLE			
	Abut.	Pier	
R <sub>DC1</sub>	(k)	16.0	42.9
R <sub>DC2</sub>	(k)	1.7	8.1
R <sub>DW</sub>	(k)	3.3	15.6
R <sub>ℓ + IM</sub>	(k)	55.7	91.4
R <sub>Total</sub>	(k)	76.7	158.0

*TOP OF BEAM ELEVATIONS						
Location	Beam 1	Beam 2	Beam 3	Beam 4	Beam 5	Beam 6
℄ Brg. N. Abut.	703.50	703.63	703.75	703.68	703.57	703.41
℄ Brg. Pier 1	703.49	703.62	703.74	703.67	703.56	703.41
℄ Splice	703.48	703.61	703.72	703.66	703.54	703.39
℄ Brg. Pier 2	703.45	703.58	703.69	703.63	703.51	703.36
℄ Brg. S. Abut.	703.40	703.54	703.65	703.59	703.47	703.32

\*For Fabrication Only

$I_s, S_s$ : Non-composite moment of inertia and section modulus of the steel section used for computing  $f_s$  (Total-Strength I, and Service II) due to non-composite dead loads (in<sup>4</sup> and in<sup>3</sup>).

$I_c(n), S_c(n)$ : Composite moment of inertia and section modulus of the steel and deck based upon the modular ratio, "n", used for computing  $f_s$  (Total-Strength I, and Service II) in uncracked sections, due to short-term composite live loads (in<sup>4</sup> and in<sup>3</sup>).

$I_c(3n), S_c(3n)$ : Composite moment of inertia and section modulus of the steel and deck based upon 3 times the modular ratio, "3n", used for computing  $f_s$  (Total-Strength I, and Service II) in uncracked sections, due to long-term composite (superimposed) dead loads (in<sup>4</sup> and in<sup>3</sup>).

$I_c(cr), S_c(cr)$ : Composite moment of inertia and section modulus of the steel and longitudinal deck reinforcement, used for computing  $f_s$  (Total-Strength I and Service II) in cracked sections, due to both short-term composite live loads and long-term composite dead loads (in<sup>4</sup> and in<sup>3</sup>).

DC1: Un-factored non-composite dead load (kips/ft.).

M<sub>DC1</sub>: Un-factored moment due to non-composite dead load (kip-ft.).

DC2: Un-factored long-term composite (superimposed excluding future wearing surface) dead load (kips/ft.).

M<sub>DC2</sub>: Un-factored moment due to long-term composite (superimposed excluding future wearing surface) dead load (kip-ft.).

DW: Un-factored long-term composite (superimposed future wearing surface only) dead load (kips/ft.).

M<sub>DW</sub>: Un-factored moment due to long-term composite (superimposed future wearing surface only) dead load (kip-ft.).

M<sub>ℓ + IM</sub>: Un-factored live load moment plus dynamic load allowance (kip-ft.).

M<sub>u</sub> (Strength I): Factored design moment (kip-ft.).  
1.25 (M<sub>DC1</sub> + M<sub>DC2</sub>) + 1.5 M<sub>DW</sub> + 1.75 M<sub>ℓ + IM</sub>

φ<sub>r</sub>M<sub>n</sub>: Compact composite positive moment capacity computed according to Article 6.10.7.1 (kip-ft.).

f<sub>s</sub> DC1: Un-factored stress at edge of flange for controlling steel flange due to vertical non-composite dead loads as calculated below (ksi).  
M<sub>DC1</sub> / S<sub>nc</sub>

f<sub>s</sub> DC2: Un-factored stress at edge of flange for controlling steel flange due to vertical composite dead loads as calculated below (ksi).  
M<sub>DC2</sub> / S<sub>c(3n)</sub> or M<sub>DC2</sub> / S<sub>c(cr)</sub> as applicable.

f<sub>s</sub> DW: Un-factored stress at edge of flange for controlling steel flange due to vertical composite future wearing surface loads as calculated below (ksi).  
M<sub>DW</sub> / S<sub>c(3n)</sub> or M<sub>DW</sub> / S<sub>c(cr)</sub> as applicable.

f<sub>s</sub> (ℓ + IM): Un-factored stress at edge of flange for controlling steel flange due to vertical composite live plus impact loads as calculated below (ksi).  
M<sub>ℓ + IM</sub> / S<sub>c(n)</sub> or M<sub>ℓ + IM</sub> / S<sub>c(cr)</sub> as applicable.

f<sub>s</sub> (Service II): Sum of stresses as computed below (ksi).  
f<sub>s</sub>DC1 + f<sub>s</sub>DC2 + f<sub>s</sub>DW + 1.3 f<sub>s</sub>(ℓ + IM)

0.95R<sub>h</sub>F<sub>yr</sub>: Composite stress capacity for Service II loading according to Article 6.10.4.2 (ksi).

f<sub>s</sub> (Total)(Strength I): Sum of stresses as computed below on non-compact section (ksi).  
1.25 (f<sub>s</sub>DC1 + f<sub>s</sub>DC2) + 1.5 f<sub>s</sub>DW + 1.75 f<sub>s</sub>(ℓ + IM)

φ<sub>r</sub>F<sub>n</sub>: Non-Compact composite positive or negative stress capacity for Strength I loading according to Article 6.10.7.2 (ksi).

V<sub>r</sub>: Maximum factored shear range in composite portion of span computed according to Article 6.10.10.

**benesch**  
engineers · scientists · planners  
Alfred Benesch & Company  
205 North Michigan Avenue, Suite 2400  
Chicago, Illinois 60601  
312-565-0450 Job No. 3938.09

FILE NAME = 0380222&0223.66948.018.stldet.dgn	USER NAME = rgr:mm	DESIGNED - JLS	REVISED -
PLOT SCALE =		CHECKED - AAY	REVISED -
PLOT DATE = 08/18/2011		DRAWN - RMG	REVISED -
		CHECKED - KJN	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**STRUCTURAL STEEL DETAILS  
STRUCTURE NO. 038-0222/0223**  
SHEET NO. S18 OF S41 SHEETS

F.A.I. R.T.E.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
57	(38-8) BR & BR-1	IROUOIS	73	33
CONTRACT NO. 66948				
ILLINOIS FED. AID PROJECT				

x:\3900s\3938\structures\1-57 overspringcreek\final\plans\0380222&0223.66948.018.stldet.dgn 08/18/2011