

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.⁴ and in.³).

$I_c(n), S_c(n)$: 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.⁴ and in.³).

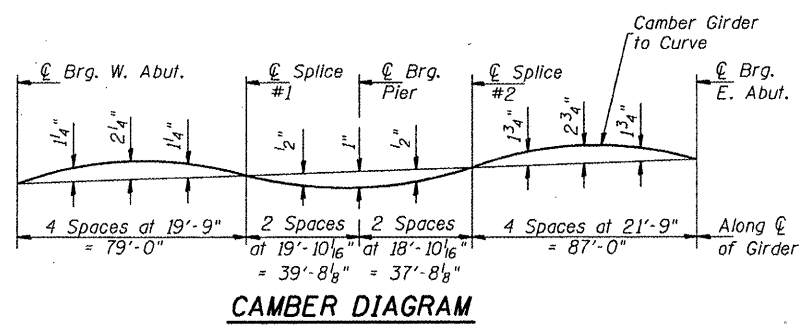
$I_c(3n), S_c(3n)$: Composite moment of inertia and section modulus of the steel and deck based upon 3 times the modular ratio, "3n", used for computing f_s (Total-Strength I, and Service II) in uncracked sections, due to long-term composite (superimposed) dead loads (in.⁴ and in.³).

$I_c(cr), S_c(cr)$: 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.⁴ and in.³).

DC1: Un-factored non-composite dead load (kips/ft.).
 MDC1: 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.).
 MDC2: 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.).
 MDW: Un-factored moment due to long-term composite (superimposed future wearing surface only) dead load (kip-ft.).
 M_{L + IM}: Un-factored live load moment plus dynamic load allowance (impact) (kip-ft.).
 M_u (Strength I): Factored design moment (kip-ft.).
 $1.25 (M_{DC1} + M_{DC2}) + 1.5 M_{DW} + 1.75 M_{L + IM}$
 $\phi_r M_n$: Compact composite positive moment capacity computed according to Article 6.10.7.1 (kip-ft.).
 f_s DC1: Un-factored stress at edge of flange for controlling steel flange due to vertical non-composite dead loads as calculated below (ksi).
 M_{DC1} / S_{sc}
 f_s DC2: Un-factored stress at edge of flange for controlling steel flange due to vertical composite dead loads as calculated below (ksi).
 $M_{DC2} / S_c(3n)$ or $M_{DC2} / S_c(cr)$ as applicable.
 f_s DW: Un-factored stress at edge of flange for controlling steel flange due to vertical composite future wearing surface loads as calculated below (ksi).
 $M_{DW} / S_c(3n)$ or $M_{DW} / S_c(cr)$ as applicable.
 f_s (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).
 $M_{L + IM} / S_c(3n)$ or $M_{L + IM} / S_c(cr)$ as applicable.
 f_s (Service II): Sum of stresses as computed below (ksi).
 $f_{sDC1} + f_{sDC2} + f_{sDW} + 1.3 f_s(L + IM)$
 $0.95R_h F_y f$: Composite stress capacity for Service II loading according to Article 6.10.4.2 (ksi).
 f_s (Total/Strength I): Sum of stresses as computed below on non-compact section (ksi).
 $1.25 (f_{sDC1} + f_{sDC2}) + 1.5 f_{sDW} + 1.75 f_s(L + IM)$
 $\phi_r F_n$: Non-Compact composite positive or negative stress capacity for Strength I loading according to Article 6.10.7.2 (ksi).
 V_r : Maximum factored shear range in composite portion of span computed according to Article 6.10.10.

INTERIOR GIRDER MOMENT TABLE			
	0.4 Sp. 1	Pier	0.6 Sp. 2
I_s	(in ⁴) 19,095	51,702	19,095
$I_c(n)$	(in ⁴) 48,055	-	48,055
$I_c(3n)$	(in ⁴) 35,637	-	35,637
$I_c(cr)$	(in ⁴) -	58,613	-
S_s	(in ³) 823	2,024	823
$S_c(n)$	(in ³) 1,132	-	1,132
$S_c(3n)$	(in ³) 1,040	-	1,040
$S_c(cr)$	(in ³) -	2,110	-
DC1	(k/ft) 0.987	1.199	0.987
MDC1	(k) 743	2,573	898
DC2	(k/ft) 0.175	0.175	0.175
MDC2	(k) 140	401	169
DW	(k/ft) 0.388	0.388	0.388
MDW	(k) 311	888	375
M _{L + IM}	(k) 1,651	2,222	1,707
M _u (Strength I)	(k) 4,460	8,937	4,883
$\phi_r M_n$	(k) 5,603	9,521	5,494
f_s DC1	(ksi) 10.83	15.25	13.09
f_s DC2	(ksi) 1.62	2.28	1.95
f_s DW	(ksi) 3.59	5.05	4.33
f_s (L+IM)	(ksi) 17.50	12.64	18.10
f_s (Service II)	(ksi) 38.79	39.01	42.89
$0.95R_h F_y f$	(ksi) 47.50	47.50	47.50
f_s (Total/Strength I)	(ksi) -	-	-
$\phi_r F_n$	(ksi) -	-	-
V_r	(k) 67.7	67.3	67.4

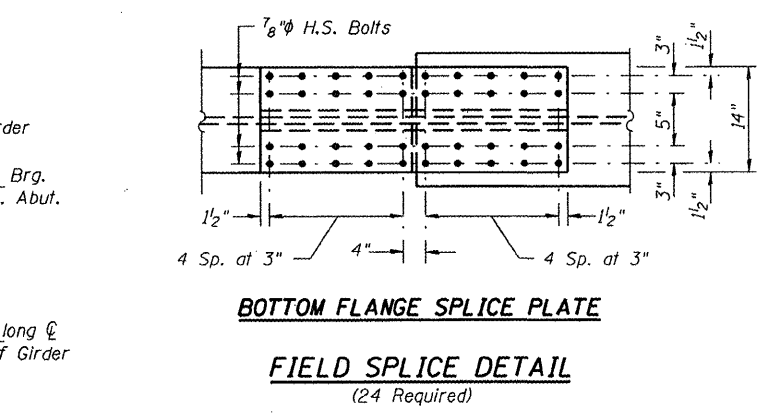
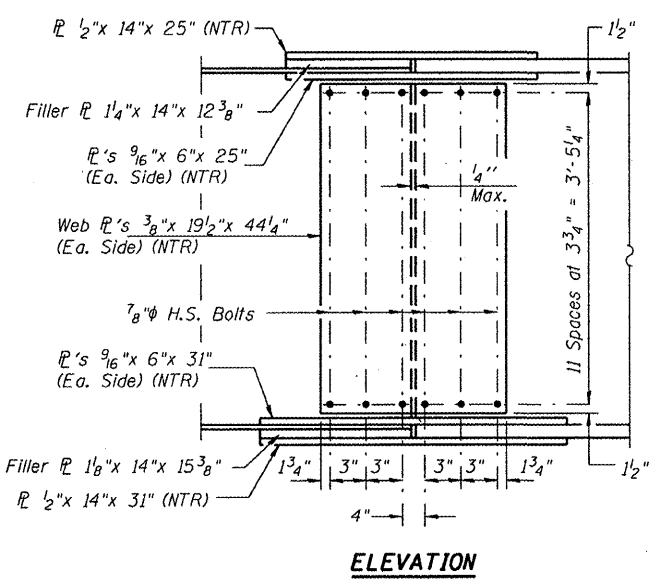
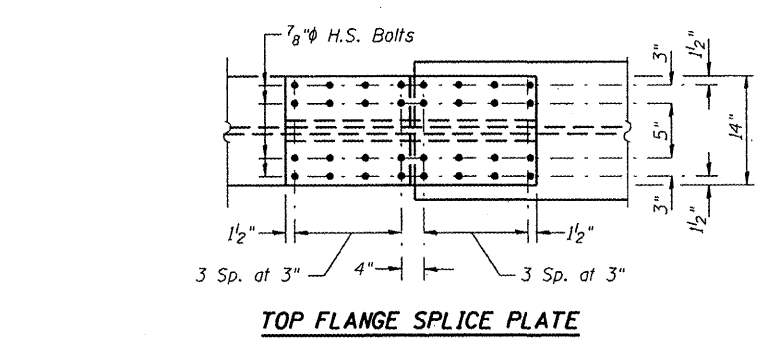
INTERIOR GIRDER REACTION TABLE			
	W. Abut.	Pier	E. Abut.
R _{DC1}	(k) 38.3	176.2	42.1
R _{DC2}	(k) 7.0	27.9	7.7
R _{DW}	(k) 15.5	61.8	17.1
R _{L + IM}	(k) 107.5	215.5	104.9
R _{Total}	(k) 168.3	481.4	171.8



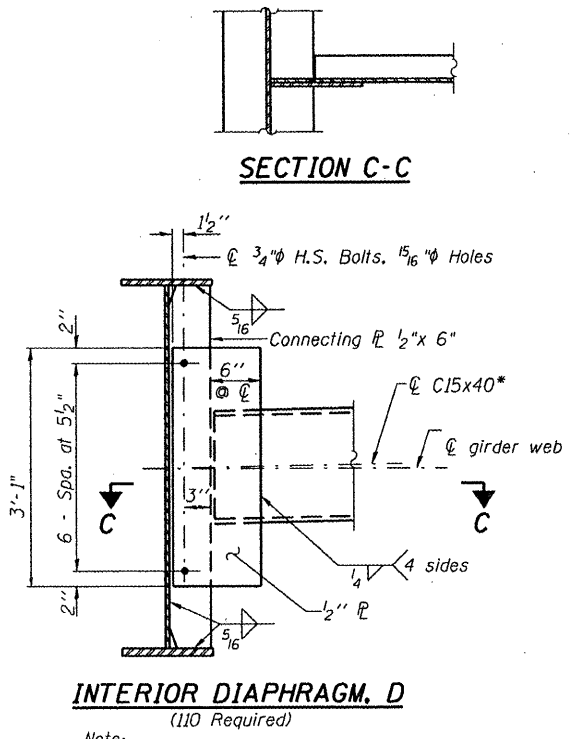
TOP OF WEB ELEVATIONS *

Location	Girder 1	Girder 2	Girder 3	Girder 4	Girder 5	Girder 6	Girder 7	Girder 8	Girder 9	Girder 10	Girder 11	Girder 12
⊕ Brg. W. Abut.	692.85	692.70	692.54	692.38	692.23	692.07	691.91	691.76	691.60	691.45	691.29	691.13
⊕ Splice 1	692.44	692.29	692.13	691.97	691.81	691.65	691.49	691.34	691.18	691.02	690.86	690.70
⊕ Brg. Pier	692.22	692.06	691.90	691.74	691.58	691.42	691.26	691.11	690.95	690.79	690.63	690.47
⊕ Splice 2	692.17	692.01	691.85	691.69	691.53	691.37	691.21	691.05	690.89	690.73	690.57	690.41
⊕ Brg. E. Abut.	691.86	691.70	691.54	691.38	691.22	691.05	690.89	690.73	690.57	690.41	690.25	690.08

* For Fabrication Only



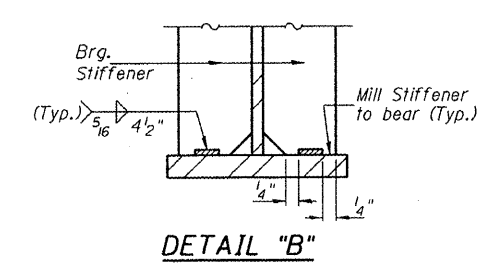
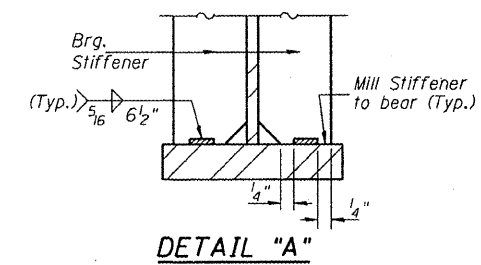
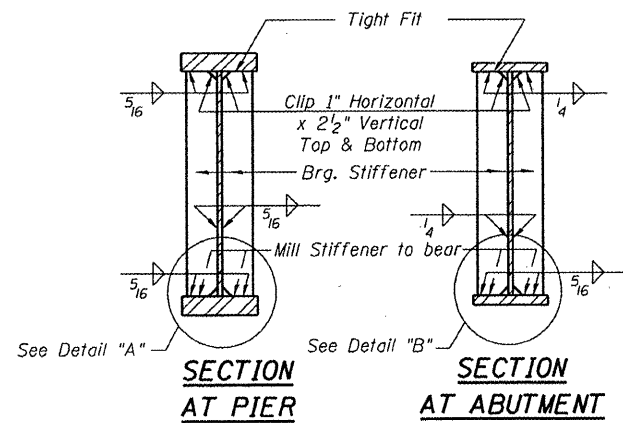
FIELD SPLICE DETAIL (24 Required)



Note:
Two hardened washers required for each set of oversized holes.

All cross frames or diaphragms shall be installed as steel is erected and secured with erection pins and bolts except as otherwise noted. Individual cross frames or diaphragms at supports may be temporarily disconnected to install bearing anchor rods.

*Alternate channels are permitted to facilitate material acquisition. Calculated weight of structural steel is based on the lighter section. The alternate, C15x50, if utilized, shall be provided at no extra cost to the Department.



Hutchison Engineering, Inc.
Jacksonville & Shorewood, Illinois

USER NAME = bnebel
 PLOT SCALE = NONE
 PLOT DATE = 10/21/2011

DESIGNED - BAN
 CHECKED - JOH
 DRAWN - TAC
 CHECKED - BAN

REVISED -
 REVISED -
 REVISED -
 REVISED -

STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

STRUCTURAL STEEL DETAILS
 STRUCTURE NO. 055-0063
 SHEET NO. 21 OF 35 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
315	55-3HB	McDonough	103	52
CONTRACT NO. 68A40				
ILLINOIS FED. AID PROJECT				