

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

	0.4 Sp. 1 or 0.6 Sp. 3	Piers	0.5 Sp. 2
I_s	(in ⁴)	3270	3270
$I_c(n)$	(in ⁴)	10216	10216
$I_c(3n)$	(in ⁴)	7550	7550
S_s	(in ³)	243	243
$S_c(n)$	(in ³)	384	384
$S_c(3n)$	(in ³)	346	346
Z	(in ³)	278	278
\bar{D}	(k/')	0.786	0.786
$M\bar{D}$	(k)	77	145
$s\bar{D}$	(k/')	0.273	0.273
$M_s\bar{D}$	(k)	31.0	40.0
M_L	(k)	207.7	118.1
M_{IM}	(k)	62.3	34.2
$^{5}_3 [M_L + I]$	(k)	450.0	253.9
M_a	(k)	725.4	570.6
M_u	(k)	1462.0	822.0
$f_s \bar{D}$ non-comp	(ksi)	3.8	7.2
$f_s \bar{D}$ (comp)	(ksi)	1.1	2.0
$f_s \bar{D} [M_L + M_I]$	(ksi)	14.1	12.5
f_s (Overload)	(ksi)	19.0	21.7
f_s (Total)	(ksi)	-	-
VR	(k)	29.3	31.3

	Abutments	Piers
$R\bar{D}$	(k)	15.1
R_L	(k)	30.5
R_I	(k)	9.2
R_{Total}	(k)	54.8

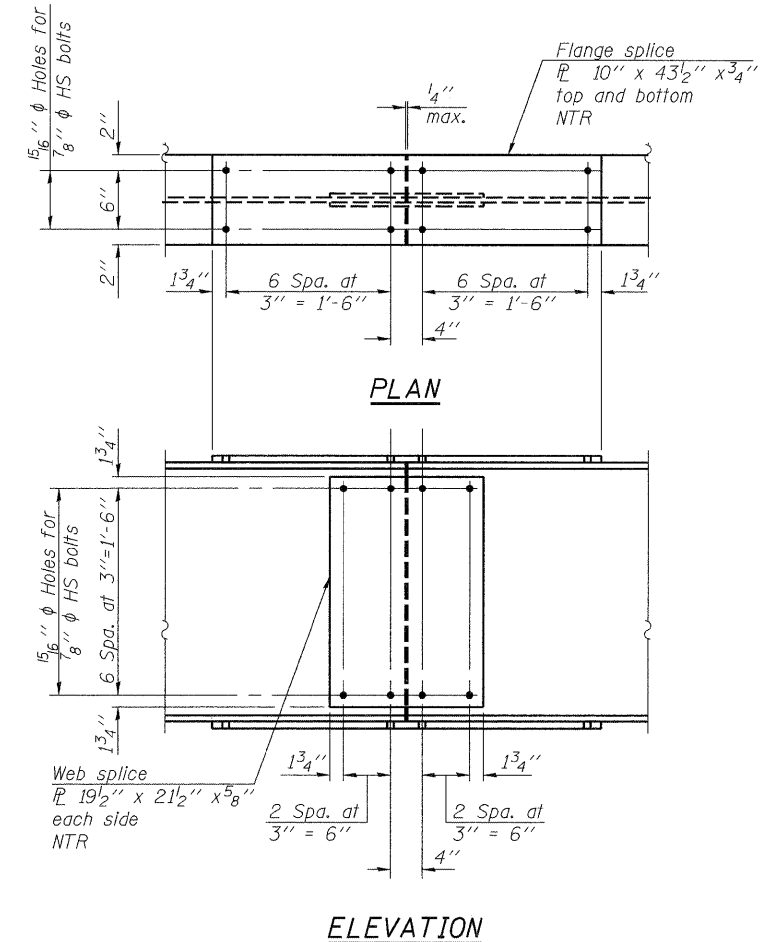
* Compact section
** Braced non-compact and partially braced section

I_s, S_s : Non-composite moment of inertia and section modulus of the steel section used for computing f_s (Total and Overload) due to non-composite dead loads (in⁴ and in³).
 $I_c(n), S_c(n)$: Composite moment of inertia and section modulus of the steel and deck based upon the modular ratio, "n", used for computing f_s (Total and Overload) due to short-term composite live loads (in⁴ and in³).
 $I_c(3n), S_c(3n)$: 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 and Overload) due to long-term composite (superimposed) dead loads (in⁴ and in³).
Z: Plastic Section Modulus of the steel section in non-composite areas (in³).
 \bar{D} : Un-factored non-composite dead load (kips/ft.).
 $M\bar{D}$: Un-factored moment due to non-composite dead load (kip-ft.).
 $s\bar{D}$: Un-factored long-term composite (superimposed) dead load (kips/ft.).
 $M_s\bar{D}$: Un-factored moment due to long-term composite (superimposed) dead load (kip-ft.).
 M_L : Un-factored live load moment (kip-ft.).
 M_I : Un-factored moment due to impact (kip-ft.).
 M_a : Factored design moment (kip-ft.).
 $1.3 [M\bar{D} + M_s\bar{D} + \frac{5}{3} (M_L + M_I)]$
 M_u : Compact composite moment capacity according to AASHTO LFD 10.50.1.1 or compact non-composite moment capacity according to AASHTO LFD 10.48.1 (kip-ft.).
 f_s (Overload): Sum of stresses as computed from the moments below (ksi).
 $M\bar{D} + M_s\bar{D} + \frac{5}{3} (M_L + M_I)$
 f_s (Total): Sum of stresses as computed from the moments below on non-compact section (ksi).
 $1.3 [M\bar{D} + M_s\bar{D} + \frac{5}{3} (M_L + M_I)]$
VR: Maximum \bar{t} + impact horizontal shear range within the composite portion of the span for stud shear connector design (kips).

TOP OF BEAM ELEVATIONS

Location	Beam A	Beam B	Beam C	Beam D	Beam E	Beam F	Beam G
⊕ Brg. South Abutment	724.80	724.92	725.05	725.18	725.30	725.43	725.56
⊕ Splice 2	724.86	724.98	725.11	725.24	725.36	725.49	725.62
⊕ Brg. Pier 2	724.90	725.03	725.16	725.28	725.41	725.54	725.66
⊕ Splice 1	725.07	725.20	725.33	725.45	725.58	725.71	725.84
⊕ Brg. Pier 1	725.13	725.26	725.39	725.52	725.64	725.77	725.90
⊕ Brg. North Abutment	725.37	725.49	725.62	725.75	725.87	726.00	726.13

Note: Top of Beam Elevations shown for Beam A are for fabrication use only.
Top of Beam Elevations shown for Beams B-G are for information purposes only.

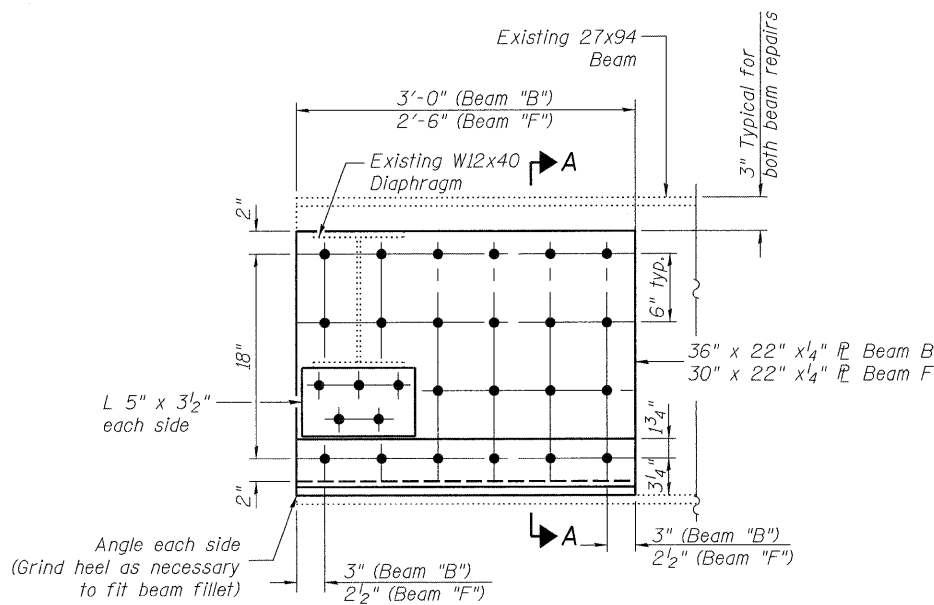


BEAM SPLICE DETAIL
(2 Required)

BILL OF MATERIAL

Item	Unit	Total
Structural Steel Removal	Pound	14,340
Stud Shear Connectors	Each	2,730

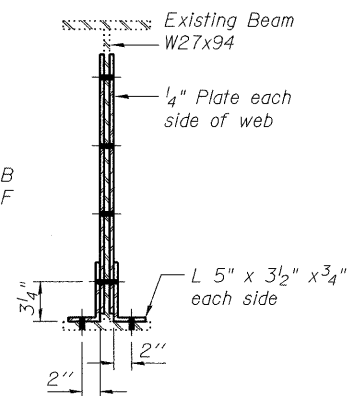
STRUCTURAL STEEL DETAILS
SOUTHBOUND ILLINOIS ROUTE 394 OVER PLUM CREEK
STATION 20+07.55



BEAM WEB REPAIR DETAIL

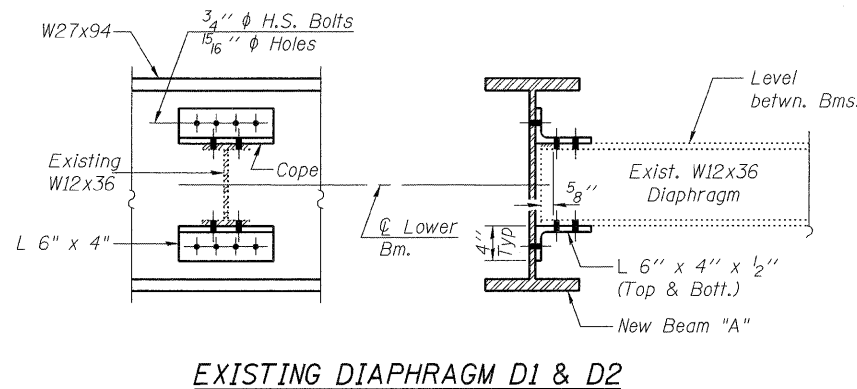
Note:
Existing Diaphragms shall be shortened to accommodate beam repairs, cost included with "Furnishing and Erecting Structural Steel".

Beam "B" horizontal bolt spacing = 6"
Beam "F" horizontal bolt spacing = 5"



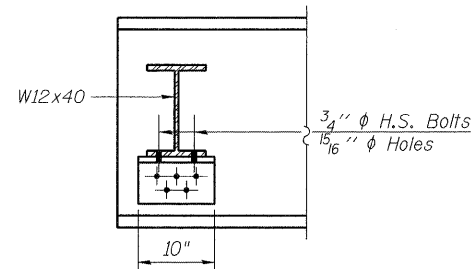
SECTION A-A

Note:
Match existing bolt spacing when replacing angle connection.
Contractor shall use new bolts for all connections being replaced.



EXISTING DIAPHRAGM D1 & D2

Note:
Two hardened washers shall be required over all oversize holes for diaphragms.



DIAPHRAGM D3

DESIGNED	SK/GMK/LCM
CHECKED	GBC/GMK/SMK
DRAWN	RR/LCM/SK
CHECKED	GBC/GMK/SMK

SHEET NO. 13	F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
23 SHEETS	332	2002-113R	WILL	242	184
SN-099-0183			CONTRACT NO. 62542		
FED. ROAD DIST. NO. 1 ILLINOIS FED. AID PROJECT					