

	0.4 Sp. 1	Pier No. 1	0.5 Sp. 2	Pier No. 2	0.6 Sp. 3
I_s (in ⁴)	3267	3267	3267	3267	3267
$I_c(n)$ (in ⁴)	9868		9868		9868
$I_c(3n)$ (in ⁴)	7429		7429		7429
S_s (in ³)	243	243	243	243	243
$S_c(n)$ (in ³)	1150		1150		1150
$S_c(3n)$ (in ³)	567		567		567
Z (in ³)		278		278	
ϕ (k/')	0.82	0.82	0.82	0.82	0.82
M_D (k)	98	249	157	281	203
s_D (k/')	0.33	0.33	0.33	0.33	0.33
M_{sD} (k)	45	87	82	97	64
M_L (k)	313	223	414	236	372
M_{iL} (k)	92	62	109	64	105
$M_3 [M_L + i]$ (k)	675	475	872	500	795
M_e (k)	106.3	1055	1441	1142	1300
M_u (k)	1890	1175	1506	1175	1519
$f_s \phi_{non-comp}$ (ksi)	4.9	12.5	7.9	14.1	7.0
$f_s \phi_{comp}$ (ksi)	1.5		2.7		2.1
$f_s \phi_3 [M_L + M_i]$ (ksi)	22.4	20.2	29	21.3	26.4
f_s (Overload) (ksi)	28.8	32.7	39.6	35.4	35.5
f_s (Total) (ksi)		42.5		46.1	
VR (k)	54.4		47.3		55.5

	S. Abut.	Pier No. 1	Pier No. 2	N. Abut.
R_L (k)	18.0	68.9	73.5	20.8
R_R (k)	38.5	45.3	45.8	39.6
R_I (k)	11.0	12.7	13.3	10.3
R_{Total} (k)	67.5	126.9	132.6	70.7

*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).

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

M_D : Un-factored moment due to non-composite dead load (kip-ft.).

s_D : Un-factored long-term composite (superimposed) dead load (kips/ft.).

M_{sD} : 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.).
 $1.3 [M_D + M_{sD} + \frac{5}{3} (M_L + M_i)]$

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.).

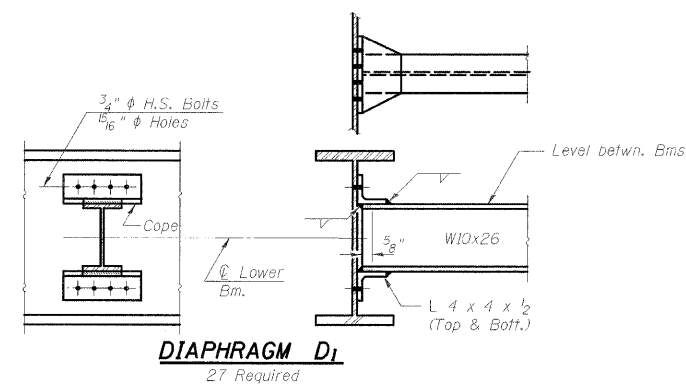
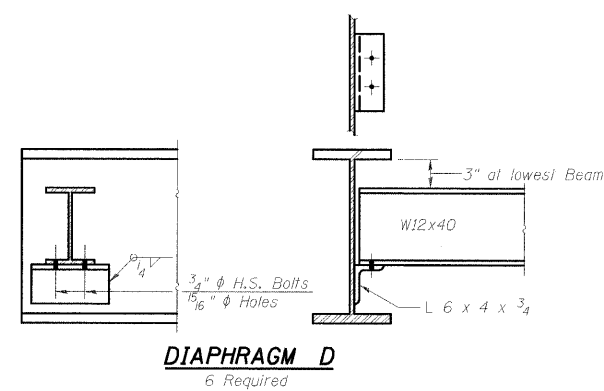
f_s (Overload): Sum of stresses as computed from the moments below (ksi).
 $M_D + M_{sD} + \frac{5}{3} (M_L + M_i)$

f_s (Total): Sum of stresses as computed from the moments below on non-compact section (ksi).
 $1.3 [M_D + M_{sD} + \frac{5}{3} (M_L + M_i)]$

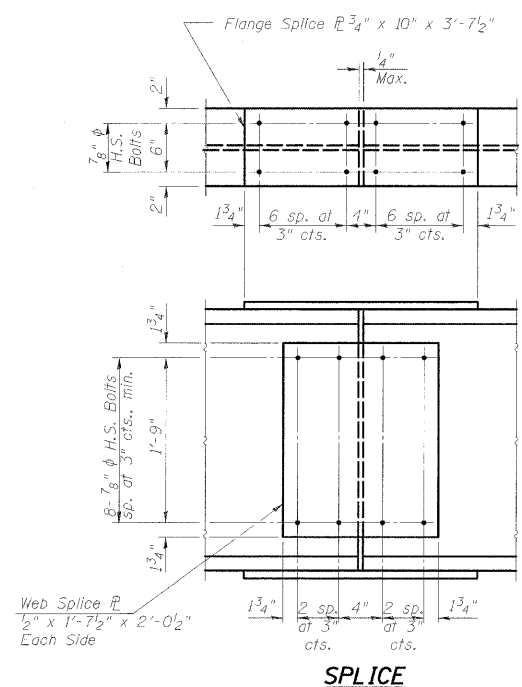
VR: Maximum t + impact horizontal shear range within the composite portion of the span for stud shear connector design (kips).

TOP OF BEAM ELEVATION TABLE

Location	Top of Beam 1	Top of Beam 2	Top of Beam 3	Top of Beam 4
Brg. South Abut.	103.788	103.902	103.902	103.788
Brg. Pier No. 1	103.870	103.985	103.985	103.870
Splice No. 1	103.863	103.978	103.978	103.863
Splice No. 2	103.759	103.874	103.874	103.759
Brg. Pier No. 2	103.727	103.842	103.842	103.727
Brg. North Abut.	103.392	103.506	103.506	103.392



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



I-2-D 10-22-04

SECTION 03-26140-00-BR
SECTION 03-21117-00-BR
LIVINGSTON COUNTY

STRUCTURAL STEEL DETAILS

DESIGNED BY S.D.H.	<p>2700 McGraw Drive Bloomington, Illinois 61704 309/833-8836, 309/833-1871 fax</p>	FILE NO. 24-7191
DRAWN BY D.J.M.		DATE 03/17/09
CHECKED BY M.S.W.		SHEET NO. 17 of 28