

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

INTERIOR BEAM MOMENT TABLE					
		0.4 Sp. 1 or 0.6 Sp. 4	Pier 1 or Pier 3	0.5 Sp. 2 or 0.5 Sp.3	Pier 2
I_s	(in ⁴)	2850	2850	2850	2850
$I_c(n)$	(in ⁴)	9051		9051	
$I_c(3n)$	(in ⁴)	6798		6798	
S_s	(in ³)	213	213	213	213
$S_c(n)$	(in ³)	341		341	
$S_c(3n)$	(in ³)	309		309	
Z	(in ³)		244		244
DC1	(k/ft)	0.752	0.752	0.752	0.752
M _{DC1}	(k)	112	157	54	108
DC2	(k/ft)	0.150	0.150	0.150	0.150
M _{DC2}	(k)	25	16	19	
DW	(k/ft)	0.300	0.300	0.300	0.300
M _{DW}	(k)	50	49	31	39
$M_k + IM$	(k)	458	216	394	204
M_u (Strength I)	(k)	1048	678	824	574
$\phi_f M_{nc}$, $\phi_f M_{nc}$	(k)	1592	997	1634	1021
f_s DC1	(ksi)	6.3	8.8	3.0	6.1
f_s DC2	(ksi)	1.0	1.4	0.6	1.1
f_s DW	(ksi)	1.9	2.8	1.2	2.2
f_s 1.3(I+IM)	(ksi)	21.0	15.8	18.0	14.9
f_s (Service II)	(ksi)	30.2	28.8	22.9	24.3
f_s (Total)(Strength I)	(ksi)				
V _r	(k)	19.0		17.2	

* Compact Sections
** Non-Compact and Slender Sections

INTERIOR BEAM REACTION TABLE				
		Abut.	Pier 1 or Pier 3	Pier 2
R _{DC1}	(k)	19.6	38.0	31.3
R _{DC2}	(k)	22.6	7.3	6.5
R _{DW}	(k)	5.5	14.6	12.9
R _{k + IM}	(k)	63.0	84.6	82.7
R _{Total}	(k)	110.7	144.5	133.4

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 (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-Strength I, and Service II) 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-Strength I, and Service II) due to long-term composite (superimposed) dead loads (in⁴ and in³).

Z: Plastic Section Modulus of the steel section in non-composite areas. Omit line in Moment Table if not used in design calculations (in³).

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

M_{DC1}: 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_{DC2}: 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_{DW}: Un-factored moment due to long-term composite (superimposed future wearing surface only) dead load (kip-ft.).

$M_k + IM$: 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_{k + IM}

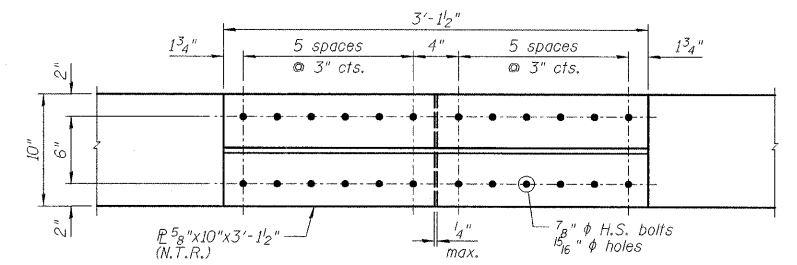
$\phi_f M_{nc}$: Compact composite positive moment capacity computed according to Article 6.10.7.1 (kip-ft.).

$\phi_f M_{nc}$: Compact non-composite negative moment capacity computed according to Article A6.1.1 (kip-ft.).

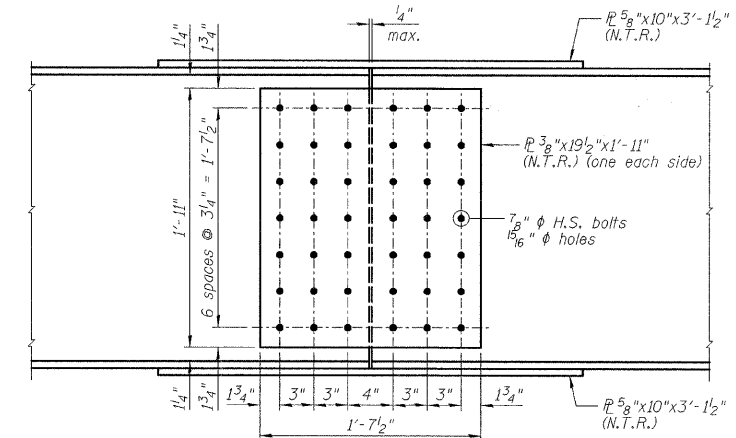
f_s (Service II): Sum of stresses as computed from the moments below (ksi).
M_{DC1} + M_{DC2} + M_{DW} + 1.3 M_{k + IM}

f_s (Total)(Strength I): Sum of stresses as computed from the moments below on non-compact section (ksi).
1.25 (M_{DC1} + M_{DC2}) + 1.5 M_{DW} + 1.75 M_{k + IM}

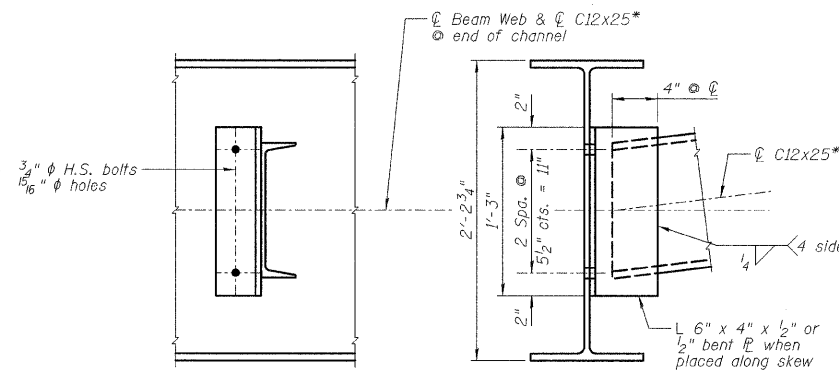
V_r: Maximum factored shear range in composite portion of span computed according to Article 6.10.10.



TOP AND BOTTOM FLANGE



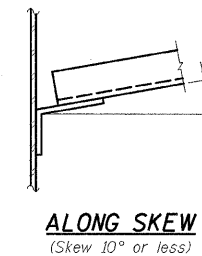
WEB
SPLICE DETAILS
(12 - Required)



DIAPHRAGM D
(45 - Required)

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

*Alternate channels are permitted to facilitate material acquisition. Calculated weight of structural steel is based on C12x25 section. The C12x30, if utilized, shall be provided at no extra cost to the department.



ALONG SKEW
(Skew 10° or less)

NOTES:

- See Sheet B17 for Splice and Diaphragm Locations.
- Load carrying components designated N.T.R. shall conform to the Supplemental Requirements for Notch Toughness, Zone 2.
- All diaphragms shall be installed as steel is erected and secured with erection pins and bolts except as otherwise noted. Individual diaphragms at supports may be temporarily disconnected to install bearing anchor rods.

DESIGNED SDH
CHECKED JML
DRAWN JWK/DJM
CHECKED MSW

DATE 10/07/09

FARNSWORTH GROUP, INC.

CONSULTING ENGINEERS - 2709 MCGRAW DRIVE BLOOMINGTON, ILLINOIS 61704 (309) 663-8435 / (309) 663-1571 FAX

STRUCTURAL STEEL
STRUCTURE NO. 053-0150

SHEET NO. B18	F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
34 SHEETS	41	15BR-2	LIVINGSTON	64	34
FED. ROAD DIST. NO.			ILLINOIS	FED. AID PROJECT	
CONTRACT NO. 66691					