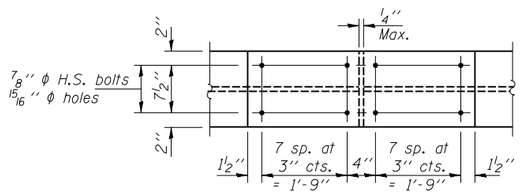
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAI 74	(57-22) BR-3	McLEAN	42	26
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT-		

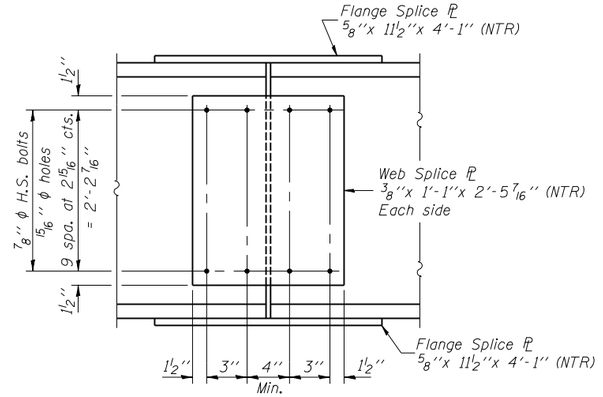
SHEET NO. 15
24 SHEETS

Contract #70672



PLAN - SPLICES 1 & 2

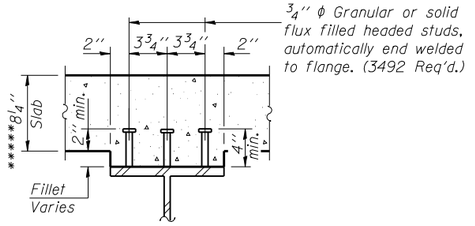
(Top & Bottom flanges)



ELEVATION - SPLICES 1 & 2

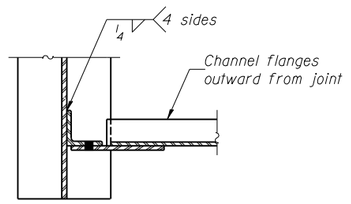
(12 Required)

(See note on sheet 14 of 24 regarding "NTR" designation)



SECTION A-A

*****Prior to grinding



SECTION B-B

INTERIOR BEAM MOMENT TABLE				
		0.4 Sp. 1 & 0.6 Sp. 3	Piers 1 & 2	0.5 Sp. 2
I_s	(in^4)	5900	5900	5900
$I_c(n)$	(in^4)	16804	———	16804
$I_c(3n)$	(in^4)	12507	———	12507
S_s	(in^3)	359	359	359
$S_c(n)$	(in^3)	544	———	544
$S_c(3n)$	(in^3)	493	———	493
ℓ	(k/')	0.875	1.385	0.875
$M\ell$	('k)	222.4	518.3	160.7
$s\ell$	(k/')	0.510	———	0.510
$M_s\ell$	('k)	149.2	———	143.3
M_L	('k)	446.0	239.0	456.2
M_{Imp}	('k)	121.3	63.3	117.7
$\frac{5}{3}[M_L + Imp]$	('k)	945.5	503.8	956.5
M_a	('k)	1712.2	1328.7	1638.7
M_u	('k)	2164.5	———	2306.9
f_s ℓ non-comp	(ksi)	7.43	17.32	5.37
f_s ℓ (comp)	(ksi)	3.63	———	3.49
f_s $\frac{5}{3}[M_L + M_{Imp}]$	(ksi)	20.86	16.84	21.10
f_s (Overload)	(ksi)	31.92	34.16	29.96
f_s (Total)	(ksi)	———	44.41	———
VR	(k)	53.3	———	45.0

INTERIOR BEAM REACTION TABLE			
		Abutments	Piers
$R\ell$	(k)	32.0	97.3
R_L	(k)	30.4	37.5
Imp.	(k)	8.3	9.9
R_{Total}	(k)	70.7	144.7

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 ($in.^4$ 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 and Overload) 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 and Overload) due to long-term composite (superimposed) dead loads ($in.^4$ and $in.^3$).

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

$M\ell$: Un-factored moment due to non-composite dead load (kip-ft.).

$s\ell$: Un-factored long-term composite (superimposed) dead load (kips/ft.)

$M_s\ell$: Un-factored moment due to long-term composite (superimposed) dead load (kip-ft.).

M_L: Un-factored live load moment (kip-ft.).

M_{Imp}: Un-factored moment due to impact (kip-ft.).

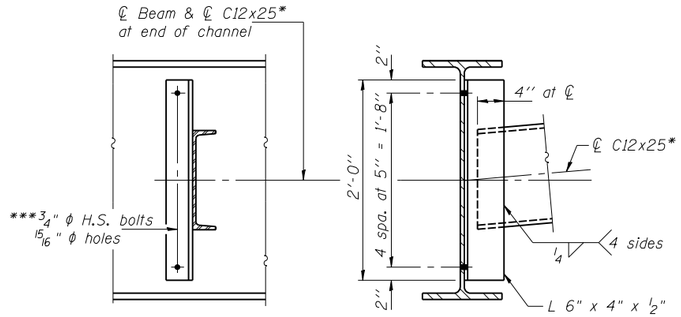
M_a: Factored design moment (kip-ft.). $1.3\ [M\ell + M_s\ell + \frac{5}{3}(M_L + M_{Imp})]$

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). $M\ell + M_s\ell + \frac{5}{3}(M_L + M_{Imp})$

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

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

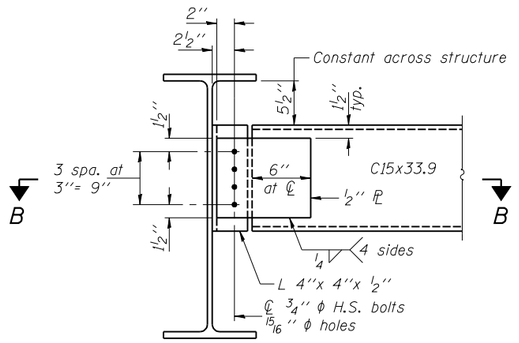


DIAPHRAGM D

(45 Required)

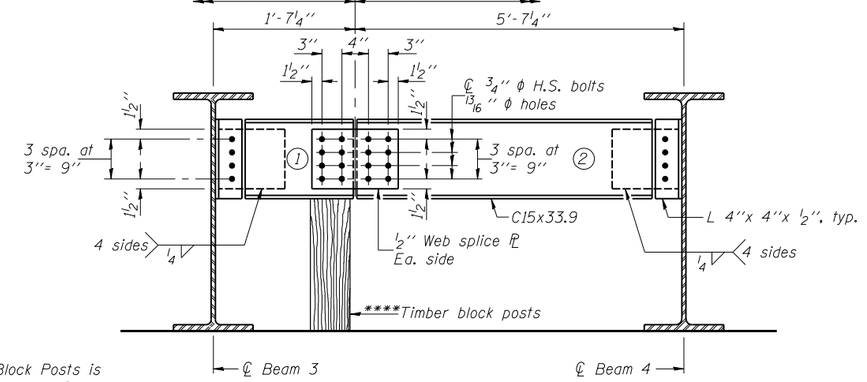
* Alternate channels C12x30 may be used to facilitate material aquisition. The calculated weight of structural steel is based on the lighter section, C12x25. The alternate, if utilized, will be provided at no extra cost to the department.

*** $1\frac{1}{2}$'' vertical x $\frac{13}{16}$'' slotted holes in connection angles at the north side of Beam 4 only, except at the piers, provide $\frac{5}{16}$'' plate washers for slotted holes. The bolts for the slotted holes in angles at Beam 4 shall be finger tightened prior to the deck slab pouring of Stage II Construction and then be fully tightened after completion of Stage II pour.



DIAPHRAGM D_1

(8 Required)



****Cost of Timber Block Posts is included with Structural Steel.

DIAPHRAGM D_2 AT STAGE CONSTRUCTION LINE

(Looking East - 2 Required)

END DIAPHRAGM D_2 STAGE CONSTRUCTION SEQUENCE

1.) Order Diaphragm in two sections.
2.) Attach section (1) of Diaphragm to Beam 3.
3.) Place Timber Block Posts between section (1) of diaphragm and abutment bearing seat.
4.) Attach section (2) of diaphragm to both Beam 4 and section (1) of diaphragm during Stage II Construction with splice plates.
5.) Remove Timber Block Posts.

**TOP OF BEAM ELEVATIONS (E.B.)

Location	℄ Brg. W. Abut.	℄ Brg. Pier 1	℄ Splice 1	℄ Brg. Pier 2	℄ Splice 2	℄ Brg. E. Abut.
Beam 1	756.45	756.02	755.94	755.71	755.67	755.60
Beam 2	756.58	756.16	756.07	755.84	755.80	755.74
Beam 3	756.69	756.27	756.18	755.96	755.92	755.85
Beam 4	756.63	756.21	756.12	755.89	755.85	755.79
Beam 5	756.51	756.08	756.00	755.78	755.74	755.67
Beam 6	756.36	755.93	756.85	755.63	755.59	755.52

**For fabrication use only.

Notes: Two hardened washers required for each set of oversized holes.
All splice plates shall be AASHTO M 270, Grade 50.

DESIGNED	DPN
CHECKED	SMR
DRAWN	h.t. duong
CHECKED	DPN/SMR

Jan. 31. 2008
EXAMINED Thomas J. Domagalski
ENGINEER OF BRIDGE DESIGN
PASSED Ralph E. Anderson
ENGINEER OF BRIDGES AND STRUCTURES

STRUCTURAL STEEL DETAILS
F.A.I. RT. 74 - SEC. (57-22)BR-3
McLEAN COUNTY
STATION 1039+00
STRUCTURE NO. 057-0125 (E.B.)