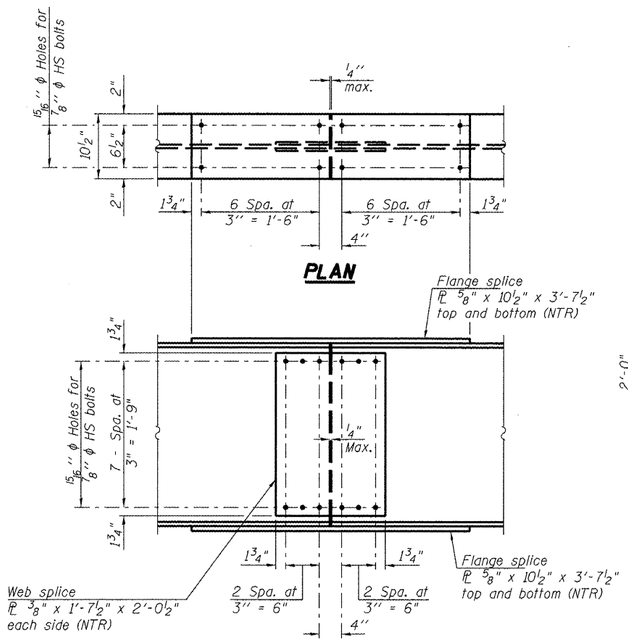
TOP of BEAM ELEVATIONS TABLE

For Fabrication Only

Beam Number	℄ Brg. No. Abut.	℄ Brg. Pier 1	℄ Splice No. 1	℄ Splice No. 2	℄ Brg. Pier 2	℄ Brg. So. Abut.
Beam 1	457.29	457.26	457.26	457.07	457.00	456.78
Beam 2	457.40	457.37	457.36	457.17	457.10	456.88
Beam 3	457.50	457.46	457.44	457.26	457.18	456.96
Beam 4	457.61	457.52	457.49	457.28	457.20	456.98
Beam 5	457.71	457.55	457.49	457.19	457.12	456.90
Beam 6	457.82	457.58	457.49	457.11	457.03	456.81
Beam 7	457.93	457.59	457.48	457.01	456.94	456.72



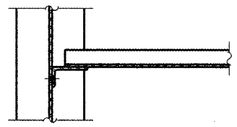
PLAN

ELEVATION

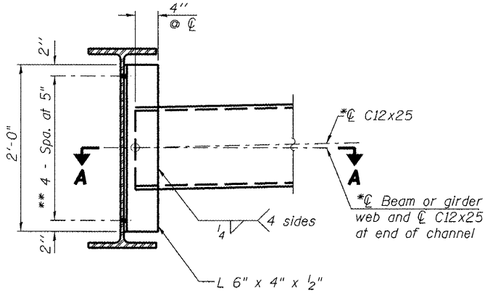
FIELD SPLICE DETAIL

(14 Required)

Note: Load carrying components designated "NTR" shall conform to the Impact Testing Requirements, Zone 2.



SECTION A-A



INTERIOR DIAPHRAGM D1

(35 Required)

Note:
Two hardened washers required for each set of oversized holes.
*Alternate channels C12x30 are permitted to facilitate material acquisition. Calculated weight of structural steel is based on the lighter section.
The alternate, if utilized, shall be provided at no additional cost to the Department.
**3/4" ϕ HS bolts, 15/16" ϕ holes

INTERIOR BEAM MOMENT TABLE				
		0.4 Sp. 1 or 0.6 Sp. 3	Pier 1 or 2	0.5 Sp. 2
I_s	(in^4)	3990	3990	3990
$I_c(n)$	(in^4)	11273	-	11273
$I_c(3n)$	(in^4)	8308	-	8308
$I_c(cr)$	(in^4)		5700	
S_s	(in^3)	269	269	269
$S_c(n)$	(in^3)	409	-	409
$S_c(3n)$	(in^3)	369	-	369
$S_c(cr)$	(in^3)		317	
DC1	(k/')	0.687	0.687	0.687
M_{DC1}	('k)	7	250	195
DC2	(k/')	0.130	0.130	0.130
M_{DC2}	('k)	1	47	37
DW	(k/')	0.260	0.260	0.260
M_{DW}	('k)	3	95	74
M_{L+IM}	('k)	322	445	505
M_u (Strength I)	('k)	577	1293	1283
$\phi_r M_n, \phi_r M_{nc}$	('k)	2165	1487	2029
f_s DC1	(ksi)	0.3	11.18	8.69
f_s DC2	(ksi)	0.04	1.79	1.20
f_s DW	(ksi)	0.08	3.59	2.40
f_s (L+IM)	(ksi)	12.27	21.89	19.23
f_s (Service II)	(ksi)	12.69	38.45	31.52
$0.95R_hF_{yf}$	(ksi)	47.50	47.50	47.50
V_r	(k)	18.9	23.5	19.6

INTERIOR BEAM REACTION TABLE			
		Abuts.	Pier 1 or 2
R_{DC1}	(k)	5.4	44.0
R_{DC2}	(k)	1.0	8.3
R_{DW}	(k)	2.0	16.7
R_{L+IMP}	(k)	50.5	88.1
R_{Total}	(k)	58.9	157.1

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.).

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_{L+IM}: Un-factored live load moment plus dynamic load allowance (impact) ((kip-ft.).

M_u (Strength I): Factored design moment (kip-ft.).
$1.25\,(M_{DC1} + M_{DC2}) + 1.5\,M_{DW} + 1.75\,M_{L+IM}$

$\phi_r M_n, \phi_r M_{nc}$: Compact composite positive moment capacity computed according to Article 6.10.7.1 or negative moment capacity computed according to Appendix A6 (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_{nc}

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.

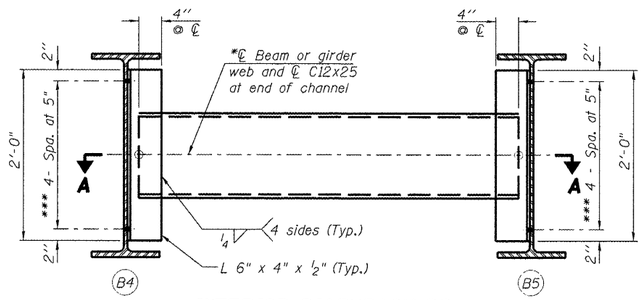
f_s DW: Un-factored stress at edge of flange for controlling steel flange due to vertical composite future wearing surface loads as calculated below (ksi).
$M_{DW} / S_c(3n)$ or $M_{DW} / S_c(cr)$ as applicable.

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).
$f_{sDC1} + f_{sDC2} + f_{sDW} + 1.3\,f_s(L+IM)$

$0.95R_hF_yf$: Composite stress capacity for Service II loading according to Article 6.10.4.2 (ksi).

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



INTERIOR DIAPHRAGM D2

(7 Required)

*** 3/4" ϕ H.S. bolts, 13/16" ϕ holes in Beam 5 web and 13/16" x 1 7/8" vertically slotted holes in connection angle at Beam 5 end of diaphragm assembly. 3/4" ϕ H.S. bolts, 15/16" ϕ holes in in all connection parts at Beam 4 end of diaphragm assembly. Other notes on Diaphragm D1 pertain and Section A-A Similar.

Note:
All connecting angles and diaphragms shall conform to the requirements of AASHTO M270 Grade 36, and all beams, splice plates and bearing plates shall conform to the requirements of AASHTO M270 Grade 50.

FILE NAME = 076002B-78134.dgn	USER NAME = huffm00028	DESIGNED - BDC	REVISED -	
		CHECKED - MNM	REVISED -	
	PLOT SCALE =	DRAWN - DAB	REVISED -	
	PLOT DATE = 04-24-2012	CHECKED - TEH	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

STRUCTURAL STEEL DETAILS
STRUCTURE NO. 076-0028
SHEET NO. 20 OF 28 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
132	103B-1	Pope	52	44
		CONTRACT NO. 78134		
		ILLINOIS FED. AID PROJECT		