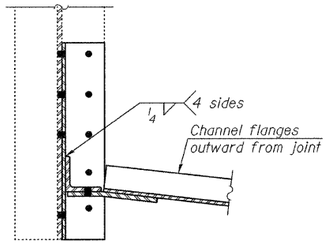
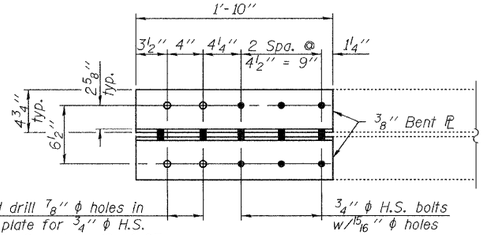
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

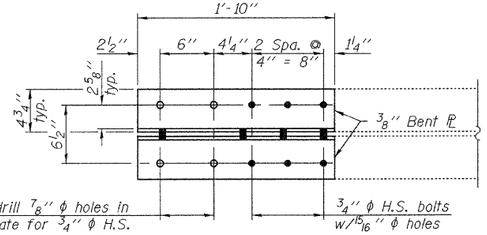


SECTION C-C



Field drill ⅞" ϕ holes in ⅜" plate for ¾" ϕ H.S. bolts. See sheet 19 of 27.

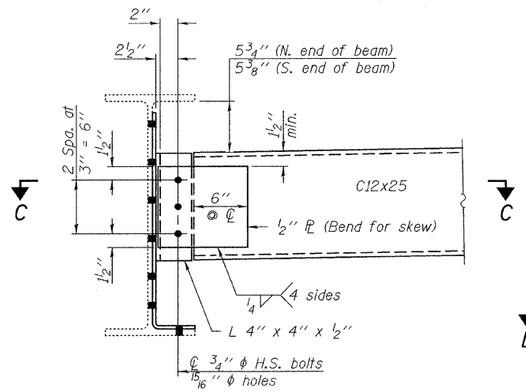
¾" ϕ H.S. bolts w/ 15/16" ϕ holes



Field drill ⅞" ϕ holes in ⅜" plate for ¾" ϕ H.S. bolts. See sheet 19 of 27.

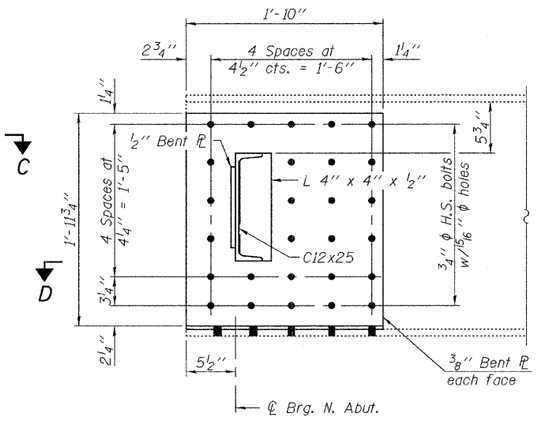
¾" ϕ H.S. bolts w/ 15/16" ϕ holes

SECTION D-D



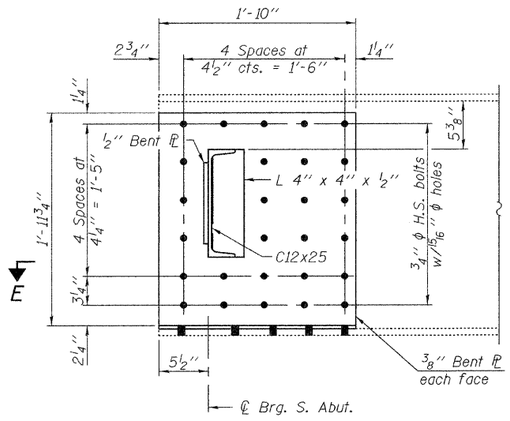
DIAPHRAGM D

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



NORTH END OF BEAM ELEVATION

SECTION E-E



SOUTH END OF BEAM ELEVATION

INTERIOR BEAM MOMENT TABLE				
		0.4 Sp. 1 or 0.6 Sp. 3	Pier 1 or Pier 2	0.5 Sp. 2
I_s	(in^4)	3270	3270	3270
$I_c(n)$	(in^4)	10045	-	10045
$I_c(3n)$	(in^4)	7483	-	7483
S_s	(in^3)	243	243	243
$S_c(n)$	(in^3)	382	-	382
$S_c(3n)$	(in^3)	345	-	345
w_Q	(k/')	0.776	1.07	0.776
M_Q	('k)	96.8	201.7	70.9
s_Q	(k/')	0.294	-	0.294
M_{sQ}	('k)	42.7	-	42.0
M_L	('k)	244.4	122.8	255.5
M_{IM}	('k)	73.3	36.1	73.6
$\frac{5}{3}[M_L + I]$	('k)	529.5	264.8	548.5
M_a	('k)	869.8	606.6	859.7
* M_u	('k)	1021.4	-	1155.1
f_s Q non-comp	(ksi)	4.8	10.0	3.5
f_s Q (comp)	(ksi)	1.5	-	1.5
f_s $\frac{5}{3}[M_L + M_I]$	(ksi)	16.6	13.1	17.2
f_s (Overload)	(ksi)	22.9	23.1	22.2
** f_s (Total)	(ksi)	-	30.0	-
VR	(k)	38.0	-	34.1

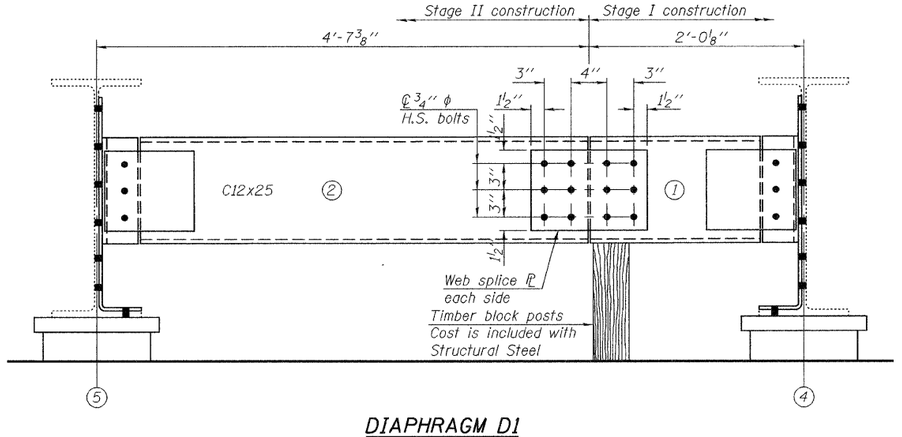
INTERIOR BEAM REACTION TABLE			
		Abut.	Pier
R_Q	(k)	17.3	53.0
R_L	(k)	32.2	39.2
R_I	(k)	9.7	11.8
R_{Total}	(k)	59.2	104.0

* 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 ($in.^4$ 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 $in.^3$).
Q: Un-factored non-composite dead load (kips/ft.).
M_Q: Un-factored moment due to non-composite dead load (kip-ft.).
s_Q: Un-factored long-term composite (superimposed) dead load (kips/ft.)
M_{sQ}: 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.).
$1.3\ [M_Q + M_{sQ} + \frac{5}{3}(M_L + M_I)]$
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).
$M_Q + M_{sQ} + \frac{5}{3}(M_L + M_I)$
f_s (Total): Sum of stresses as computed from the moments below on non-compact section (ksi).
$1.3\ [M_Q + M_{sQ} + \frac{5}{3}(M_L + M_I)]$
VR: Maximum L + impact horizontal shear range within the composite portion of the span for stud shear connector design (kips).

END DIAPHRAGM STAGE CONSTRUCTION SEQUENCE

1.) Order diaphragm in two sections.
2.) Attach section (1) of diaphragm to beam (See Diaphragm D for connection).
3.) Place timber block posts between section (1) of diaphragm and abutment bearing section.
4.) Attach section (2) of diaphragm to both beam (See Diaphragm D for connection) and section (1) of diaphragm during stage II construction with splice plates.
5.) Remove timber block posts.



DIAPHRAGM D1
(North diaphragm D1 looking South. South diaphragm D1 similar)

DESIGNED	Nicholas R. Barnett
CHECKED	Michael D. Rolape
DRAWN	Michael B. Mossman
CHECKED	N.R.B./M.D.R./G.R.A.

September 29, 2009
EXAMINED Thomas J. Domagalski
ENGINEER OF BRIDGE DESIGN
PASSED Ralph E. Anderson
ENGINEER OF BRIDGES AND STRUCTURES

STRUCTURAL STEEL DETAILS
STRUCTURE NO. 037-0017 (S.B.)

SHEET NO. 18	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
27 SHEETS	74	37-4HB-1	HENRY	148	84
			CONTRACT NO. 64264		
		ILLINOIS	FED. AID PROJECT		