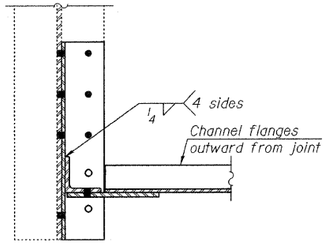
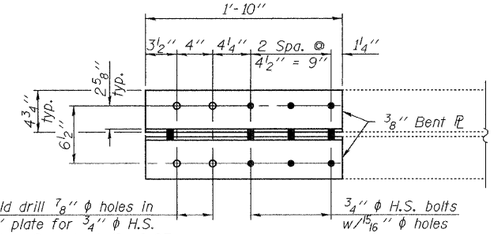
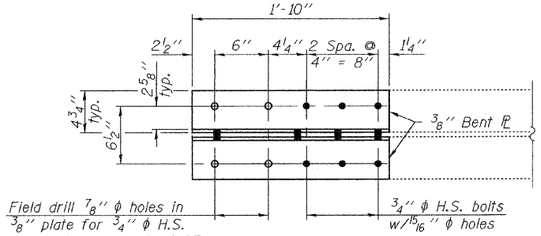
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



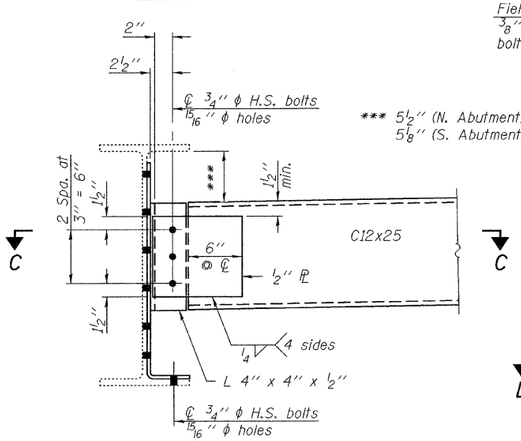

SECTION C-C




SECTION D-D

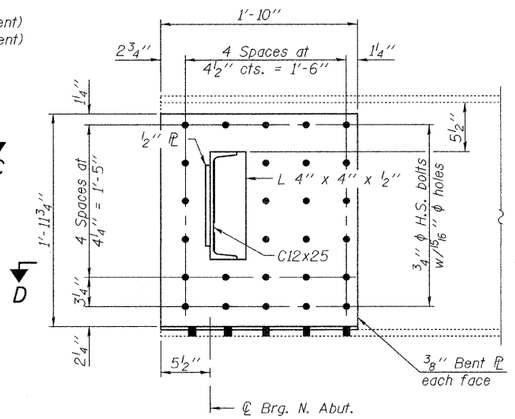



SECTION E-E

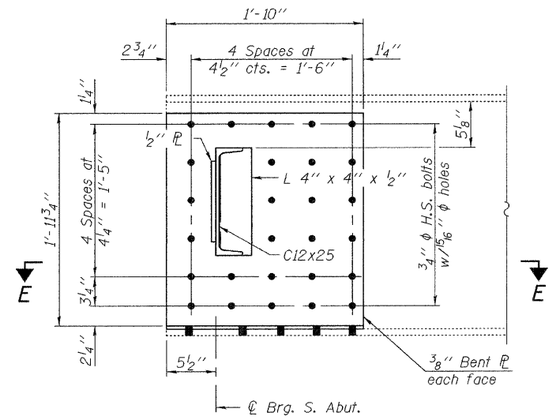



DIAPHRAGM D

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




NORTH END OF BEAM ELEVATION




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 |
| $I_c(3n)$ | ($in^4$) | 7488 | - | 7488 |
| $S_s$ | ($in^3$) | 243 | 243 | 243 |
| $S_c(n)$ | ($in^3$) | 382 | - | 382 |
| $S_c(3n)$ | ($in^3$) | 345 | - | 345 |
| $w_Q$ | (k/') | 0.781 | 1.075 | 0.781 |
| $M_Q$ | ('k) | 97.2 | 201.6 | 70.7 |
| $s_Q$ | (k/') | 0.294 | - | 0.294 |
| $M_{sQ}$ | ('k) | 42.6 | - | 41.7 |
| $M_L$ | ('k) | 244.2 | 122.2 | 253.2 |
| $M_{IM}$ | ('k) | 73.3 | 36.0 | 73.0 |
| $\frac{5}{3}[M_L + I]$ | ('k) | 529.2 | 263.7 | 543.7 |
| $M_a$ | ('k) | 869.7 | 604.9 | 852.9 |
| * $M_u$ | ('k) | 1115.6 | - | 1115.6 |
| $f_s$ $w_Q$ non-comp | (ksi) | 4.8 | 10.0 | 3.5 |
| $f_s$ $w_Q$ (comp) | (ksi) | 1.5 | - | 1.5 |
| $f_s$ $\frac{5}{3}[M_L + M_I]$ | (ksi) | 16.6 | 13.0 | 17.1 |
| $f_s$ (Overload) | (ksi) | 22.9 | 23.0 | 22.1 |
| ** $f_s$ (Total) | (ksi) | - | 29.9 | - |
| VR | (k) | 45.3 | - | 37.5 |

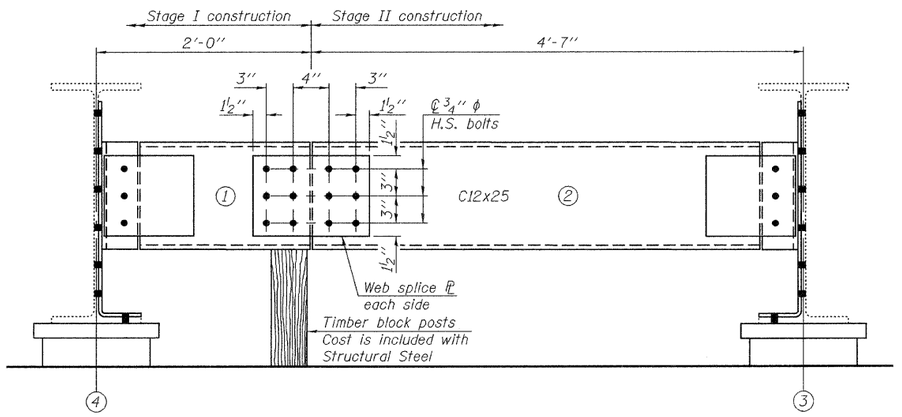
| INTERIOR BEAM REACTION TABLE | | | |
|---|---|---|---|
| | | Abut. | Pier |
| $R_Q$ | (k) | 17.3 | 53.0 |
| $R_L$ | (k) | 32.2 | 39.1 |
| $R_I$ | (k) | 9.7 | 11.8 |
| $R_{Total}$ | (k) | 59.2 | 103.9 |

* 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).
$w_Q$: 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 $M_L$ + 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 | Michael D. Rolape |
| CHECKED | Nicholas R. Barnett |
| DRAWN | Michael B. Mossman |
| CHECKED | M.D.R./N.R.B./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. 037-0018 (N.B.)

| SHEET NO. 18 | F.A.I. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|---|
| 27 SHEETS | 74 | 37-4HB-1 | HENRY | 145 | 111 |
| | | | CONTRACT NO. 64264 | | |
| | | ILLINOIS FED. AID PROJECT | | | |

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