| INTERIOR BEAM MOMENT TABLE | | | | |
|---|---|---|---|---|
| | | 0.4 Sp. 1 or 0.6 Sp. 3 | Pier 1 or 2 | 0.5 Sp. 2 |
| $I_s$ | ($in^4$) | 10,500 | 15,000 | 10,500 |
| $I_c(n)$ | ($in^4$) | 25,334 | 33,211 | 25,334 |
| $I_c(3n)$ | ($in^4$) | 18,571 | 24,174 | 18,571 |
| $I_c(cr)$ | ($in^4$) | - | 17,920 | - |
| $S_s$ | ($in^3$) | 581 | 809 | 581 |
| $S_c(n)$ | ($in^3$) | 813 | 1,101 | 813 |
| $S_c(3n)$ | ($in^3$) | 735 | 989 | 735 |
| $S_c(cr)$ | ($in^3$) | - | 875 | - |
| DC1 | (k/') | 0.824 | 0.885 | 0.824 |
| $M_{DC1}$ | ('k) | 480 | -835 | 232 |
| DC2 | (k/') | 0.25 | 0.25 | 0.25 |
| $M_{DC2}$ | ('k) | 145 | -246 | 72 |
| DW | (k/') | 0.234 | 0.234 | 0.234 |
| $M_{DW}$ | ('k) | 135 | -230 | 68 |
| $M_{L+IM}$ | ('k) | 1,243 | -1,399 | 1,054 |
| $M_u$ (Strength I) | ('k) | 3,159 | -4,145 | 2,327 |
| $\phi_f M_n$ | ('k) | 4,010 | 4,503 | 4,010 |
| $f_s$ DC1 | (ksi) | 9.9 | -12.4 | 4.8 |
| $f_s$ DC2 | (ksi) | 2.4 | -3.4 | 1.2 |
| $f_s$ DW | (ksi) | 2.2 | -3.2 | 1.1 |
| $f_s$ (L+IM) | (ksi) | 18.3 | -19.2 | 15.6 |
| $f_s$ (Service II) | (ksi) | 39.3 | -44.8 | 28.1 |
| $0.95R_hF_{yf}$ | (ksi) | 47.5 | 47.5 | 47.5 |
| $f_s$ (Total)(Strength I) | (ksi) | - | - | - |
| $\phi_f F_n$ | (ksi) | - | - | - |
| $V_f$ | (k) | 27.5 | 29.3 | 28.6 |

| BEARING SEAT ELEVATIONS | | | | |
|---|---|---|---|---|
| Beam No. | ℄ Brg. W. Abut. | ℄ Pier 1 | ℄ Pier 2 | ℄ Brg. E. Abut. |
| 1 | 732.13 | 733.81 | 734.85 | 734.60 |
| 2 | 732.13 | 733.81 | 734.85 | 734.60 |
| 3 | 732.13 | 733.89 | 734.97 | 734.75 |
| 4 | 732.24 | 733.98 | 735.09 | 734.90 |
| 5 | 732.24 | 734.06 | 735.21 | 735.05 |
| 6 | 732.36 | 734.15 | 735.33 | 735.20 |
| 7 | 732.36 | 734.24 | 735.44 | 735.35 |
| 8 | 732.47 | 734.32 | 735.56 | 735.49 |
| 9 | 732.27 | 734.16 | 735.43 | 735.39 |
| 10 | 732.07 | 733.99 | 735.29 | 735.29 |
| 11 | 731.87 | 733.81 | 735.15 | 735.18 |
| 12 | 731.67 | 733.64 | 735.01 | 735.07 |
| 13 | 731.46 | 733.47 | 734.87 | 734.95 |
| 14 | 731.22 | 733.29 | 734.73 | 734.84 |
| 15 | 731.22 | 733.29 | 734.73 | 734.84 |
| 16 | 731.22 | 733.29 | 734.73 | 734.84 |

FOR INFORMATION ONLY

$I_s$, $S_s$: 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 (superimposed) 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.).
$1.25\ (M_{DC1} + M_{DC2}) + 1.5\ M_{DW} + 1.75\ M_{L+IM}$

$\phi_f M_n$: Compact composite positive moment capacity computed according to Article 6.10.7.1 or non-slender negative moment capacity according to Article A6.1.1 or A6.1.2 (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 load plus impact loads as calculated below (ksi).
$M_{L+IM} / S_c(n)$ or $M_{DW} / S_c(cr)$ 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).

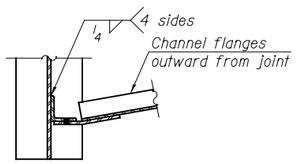
$f_s$ (Total)(Strength I): Sum of stresses as computed below on non-compact section (ksi).
$1.25\ (f_{sDC1} + f_{sDC2}) + 1.5\ f_{sDW} + 1.75\ f_s(L+IM)$

$\phi_f F_n$: Non-Compact composite positive or negative stress capacity for Strength I loading according to Article 6.10.7 or 6.10.8 (ksi).

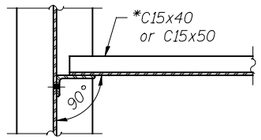
$V_f$: Maximum factored shear range in span computed according to Article 6.10.10.

| TOP OF BEAM ELEVATIONS (FOR FABRICATION ONLY) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Beam No. | ℄ Brg. W. Abut. | ℄ Splice 1 | ℄ Pier 1 | ℄ Splice 2 | ℄ Splice 3 | ℄ Pier 2 | ℄ Splice 4 | ℄ Brg. E. Abut. |
| 1 | 735.89 | 737.19 | 737.60 | 737.89 | 738.29 | 738.38 | 738.51 | 738.10 |
| 2 | 735.76 | 737.06 | 737.50 | 737.80 | 738.22 | 738.31 | 738.44 | 738.06 |
| 3 | 735.81 | 737.13 | 737.58 | 737.89 | 738.33 | 738.43 | 738.57 | 738.21 |
| 4 | 735.87 | 737.21 | 737.67 | 737.99 | 738.44 | 738.55 | 738.70 | 738.36 |
| 5 | 735.93 | 737.28 | 737.76 | 738.08 | 738.55 | 738.66 | 738.83 | 738.50 |
| 6 | 735.98 | 737.36 | 737.84 | 738.17 | 738.66 | 738.78 | 738.96 | 738.65 |
| 7 | 736.04 | 737.43 | 737.93 | 738.27 | 738.77 | 738.90 | 739.09 | 738.80 |
| 8 | 736.09 | 737.50 | 738.01 | 738.36 | 738.88 | 739.02 | 739.22 | 738.95 |
| 9 | 735.90 | 737.33 | 737.85 | 738.21 | 738.74 | 738.89 | 739.10 | 738.85 |
| 10 | 735.70 | 737.15 | 737.68 | 738.04 | 738.59 | 738.75 | 738.98 | 738.74 |
| 11 | 735.50 | 736.96 | 737.50 | 737.88 | 738.45 | 738.61 | 738.85 | 738.63 |
| 12 | 735.29 | 736.78 | 737.33 | 737.71 | 738.30 | 738.47 | 738.72 | 738.52 |
| 13 | 735.09 | 736.59 | 737.16 | 737.55 | 738.15 | 738.33 | 738.59 | 738.41 |
| 14 | 734.88 | 736.41 | 736.98 | 737.38 | 738.00 | 738.19 | 738.46 | 738.30 |
| 15 | 734.86 | 736.40 | 736.99 | 737.39 | 738.03 | 738.22 | 738.51 | 738.36 |
| 16 | 734.84 | 736.42 | 737.01 | 737.42 | 738.07 | 738.28 | 738.58 | 738.44 |

| INTERIOR BEAM REACTION TABLE | | | | | |
|---|---|---|---|---|---|
| | | W. Abut. | Pier 1 | Pier 2 | E. Abut. |
| $R_{DC1}$ | (k) | 30.20 | 91.84 | 91.84 | 30.20 |
| $R_{DC2}$ | (k) | 8.91 | 26.82 | 26.82 | 8.91 |
| $R_{DW}$ | (k) | 8.34 | 25.11 | 25.11 | 8.34 |
| $R_{L+IM}$ | (k) | 90.01 | 169.28 | 169.28 | 90.01 |
| $R_{Total}$ | (k) | 137.46 | 313.05 | 313.05 | 137.46 |

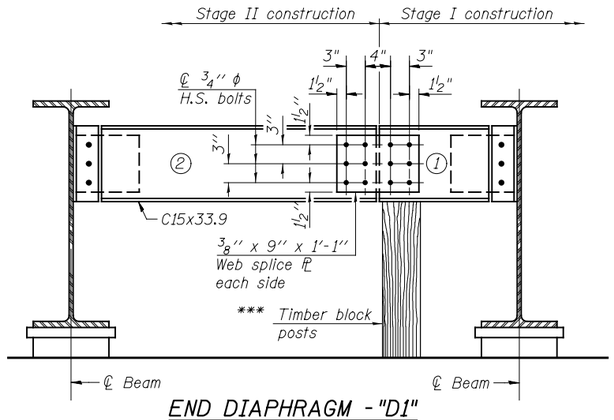



SECTION B-B




SECTION A-A

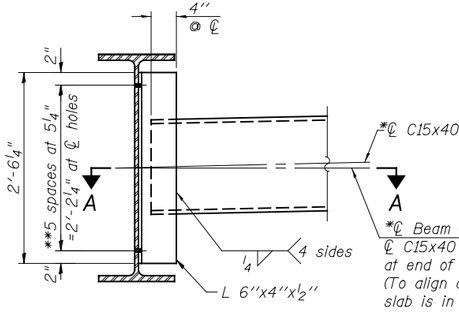
*** Cost of Timber Block Posts is included with Structural Steel.




END DIAPHRAGM - "D1"

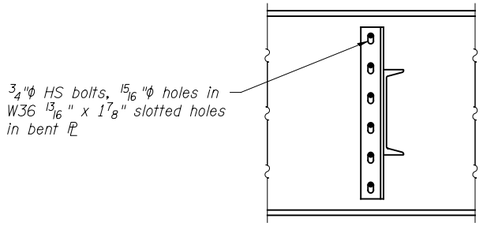
END DIAPHRAGM STAGE CONSTRUCTION SEQUENCE

1.) Order diaphragm in two sections.
2.) Attach section ① of diaphragm to beam 7.
3.) Place timber block posts between section ① of diaphragm and abutment bearing section.
4.) Attach section ② of diaphragm to both beam 8 and section ① of diaphragm during stage II construction with splice plates.
5.) Remove timber block posts.



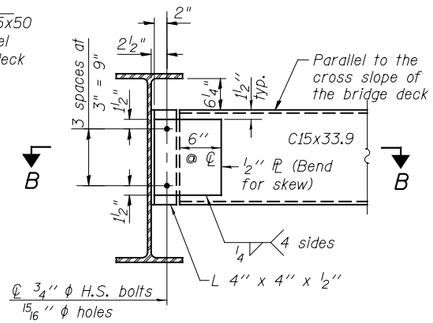

INTERIOR DIAPHRAGM - "D"

Note:
Two hardened washers required for each set of oversized holes.
Bolts for slotted holes shall be finger tightened prior to the deck slab pouring and then fully tightened after completion of the pour.
Slotted holes shall be positioned so that bolts start at one end under no concrete load and finish near the opposite end under deck load.
*Alternate channels 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.
**¾" ϕ HS bolts, 15/16" ϕ holes, u.n.o.




INTERIOR DIAPHRAGM AT STAGE CONSTRUCTION LINES

At Beams 7 & 8
(Not Required for diaphragms at ℄ Piers)
5/16" plate washer required for each slotted hole




END DIAPHRAGM - "D1"

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

URS

| USER NAME = | DESIGNED - BAR | REVISED |
|---|---|---|
| | CHECKED - AMK/PMH | REVISED |
| PLOT SCALE = | DRAWN - BAR | REVISED |
| PLOT DATE = | CHECKED - PMH | REVISED |

**STATE OF ILLINOIS**
**DEPARTMENT OF TRANSPORTATION**

**STEEL DETAILS**
**STRUCTURE NO. 022-0512**
SHEET NO. S-16 OF S-18 SHEETS

| F.A.P. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| 311 | 652-A | DuPAGE | 20 | 18 |
| | | CONTRACT NO. 60W84 | | |
| | ILLINOIS FED. AID PROJECT | | | |