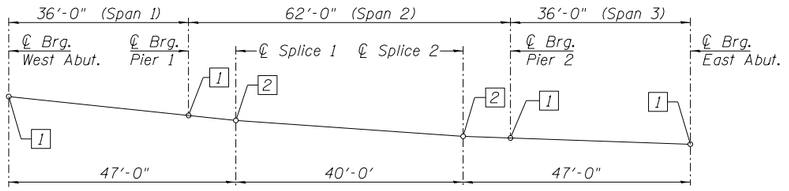


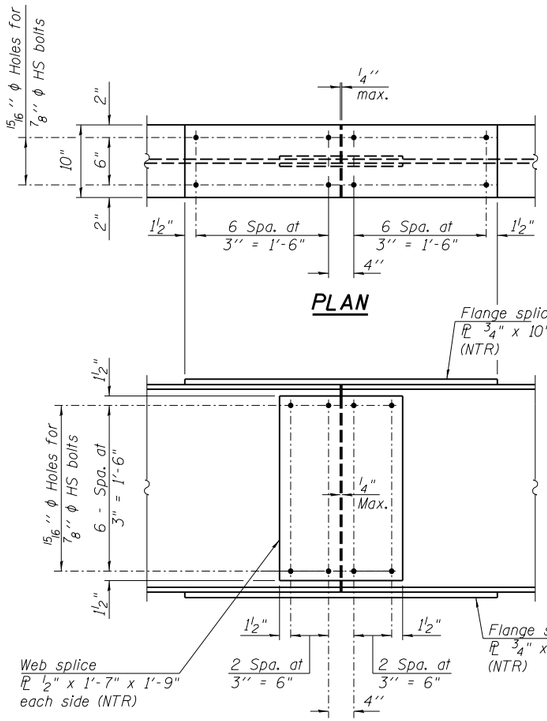

## BLOCKING DIAGRAM

1 - See Table for Final Top of Beam Elevations at abutments and piers.
2 - Theoretical Top of Beam Elevations before dead load deflections.

## TOP of BEAM ELEVATIONS TABLE

For Fabrication Only

| Beam Number | ℄ Brg. W. Abut. | ℄ Brg. Pier 1 | ℄ Splice No. 1 | ℄ Splice No. 2 | ℄ Brg. Pier 2 | ℄ Brg. E. Abut. |
|---|---|---|---|---|---|---|
| Beam 1 | 365.02 | 364.77 | 364.69 | 364.44 | 364.38 | 364.19 |
| Beam 2 | 365.12 | 364.87 | 364.79 | 364.55 | 364.49 | 364.29 |
| Beam 3 | 365.21 | 364.96 | 364.88 | 364.64 | 364.58 | 364.38 |
| Beam 4 | 365.21 | 364.96 | 364.88 | 364.64 | 364.58 | 364.38 |
| Beam 5 | 365.12 | 364.87 | 364.79 | 364.55 | 364.49 | 364.29 |
| Beam 6 | 365.02 | 364.77 | 364.69 | 364.44 | 364.38 | 364.19 |



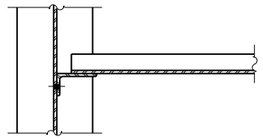

## PLAN

## ELEVATION

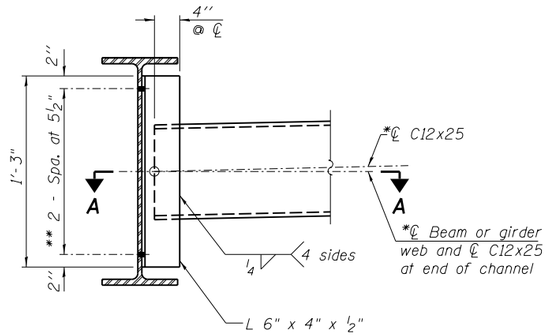
## FIELD SPLICE DETAIL

(12 Required)

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



## SECTION A-A




## INTERIOR DIAPHRAGM D1

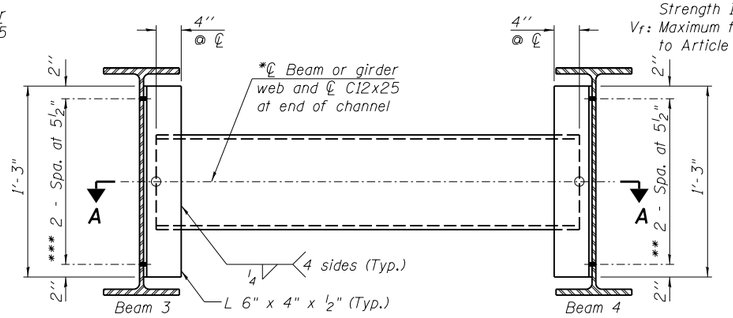
(24 Required)

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

| INTERIOR GIRDER MOMENT TABLE | | | | |
|---|---|---|---|---|
| | | 0.4 Sp. 1 or 0.6 Sp. 3 | Pier 1 or 2 | 0.5 Sp. 2 |
| $I_s$ | ($in^4$) | 3270 | 3270 | 3270 |
| $I_c(n)$ | ($in^4$) | 9468 | - | 9468 |
| $I_c(3n)$ | ($in^4$) | 7023 | - | 7023 |
| $I_c(cr)$ | ($in^4$) | - | 4786 | - |
| $S_s$ | ($in^3$) | 243 | 243 | 243 |
| $S_c(n)$ | ($in^3$) | 370 | - | 370 |
| $S_c(3n)$ | ($in^3$) | 335 | - | 335 |
| $S_c(cr)$ | ($in^3$) | - | 289 | - |
| DC1 | (k/') | 0.705 | 0.705 | 0.705 |
| $M_{DC1}$ | ('k) | 32 | 195 | 144 |
| DC2 | (k/') | 0.150 | 0.150 | 0.150 |
| $M_{DC2}$ | ('k) | 7 | 41 | 31 |
| DW | (k/') | 0.267 | 0.267 | 0.267 |
| $M_{DW}$ | ('k) | 12 | 74 | 55 |
| $M_{L+IM}$ | ('k) | 303 | 371 | 390 |
| $M_u$ (Strength I) | ('k) | 597 | 1055 | 982 |
| $\phi_f M_n$ | ('k) | 1946 | - | 1867 |
| $f_s$ DC1 | (ksi) | 1.57 | 9.62 | 7.12 |
| $f_s$ DC2 | (ksi) | 0.24 | 1.72 | 1.10 |
| $f_s$ DW | (ksi) | 0.43 | 3.06 | 1.96 |
| $f_s$ (L+IM) | (ksi) | 9.83 | 15.40 | 12.63 |
| $f_s$ (Service II) | (ksi) | 15.02 | 34.42 | 26.60 |
| $0.95R_hF_{yf}$ | (ksi) | 47.50 | 47.50 | 47.50 |
| $f_s$ (Total)(Strength I) | (ksi) | - | 45.72 | - |
| $\phi_f F_n$ | (ksi) | - | 50.00 | - |
| $V_f$ | (k) | 18.1 | 22.6 | 18.6 |

| INTERIOR GIRDER REACTION TABLE | | | |
|---|---|---|---|
| | | Abuts. | Piers |
| $R_{DC1}$ | (k) | 7.3 | 40 |
| $R_{DC2}$ | (k) | 1.5 | 8.6 |
| $R_{DW}$ | (k) | 2.8 | 15.2 |
| $R_{L+IMP}$ | (k) | 51.9 | 85.6 |
| $R_{Total}$ | (k) | 63.5 | 149.4 |

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




## INTERIOR DIAPHRAGM D2

(6 Required)

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

$I_s$, $S_s$: 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 $M_{L+IM} / S_c(cr)$ 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).
$f_s$ (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.

c:\working\dms24893\D978279-sht-bridge.dgn



| | | | |
|---|---|---|---|
| USER NAME = dowd01573 | DESIGNED - JGT | REVISED - | |
| | CHECKED - TEH | REVISED - | |
| PLOT SCALE = | DRAWN - DAP | REVISED - | |
| PLOT DATE = 03\01\2014 10:50:33 AM | CHECKED - JGT | REVISED - | |

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

**STRUCTURAL STEEL – DETAILS**
**STRUCTURE NO. 044-0061**
SHEET NO. 19 OF 29 SHEETS

| F.A.P. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| 885 | 110B-1 | JOHNSON | 52 | 42 |
| | | CONTRACT NO. 78279 | | |
| | | ILLINOIS FED. AID PROJECT | | |