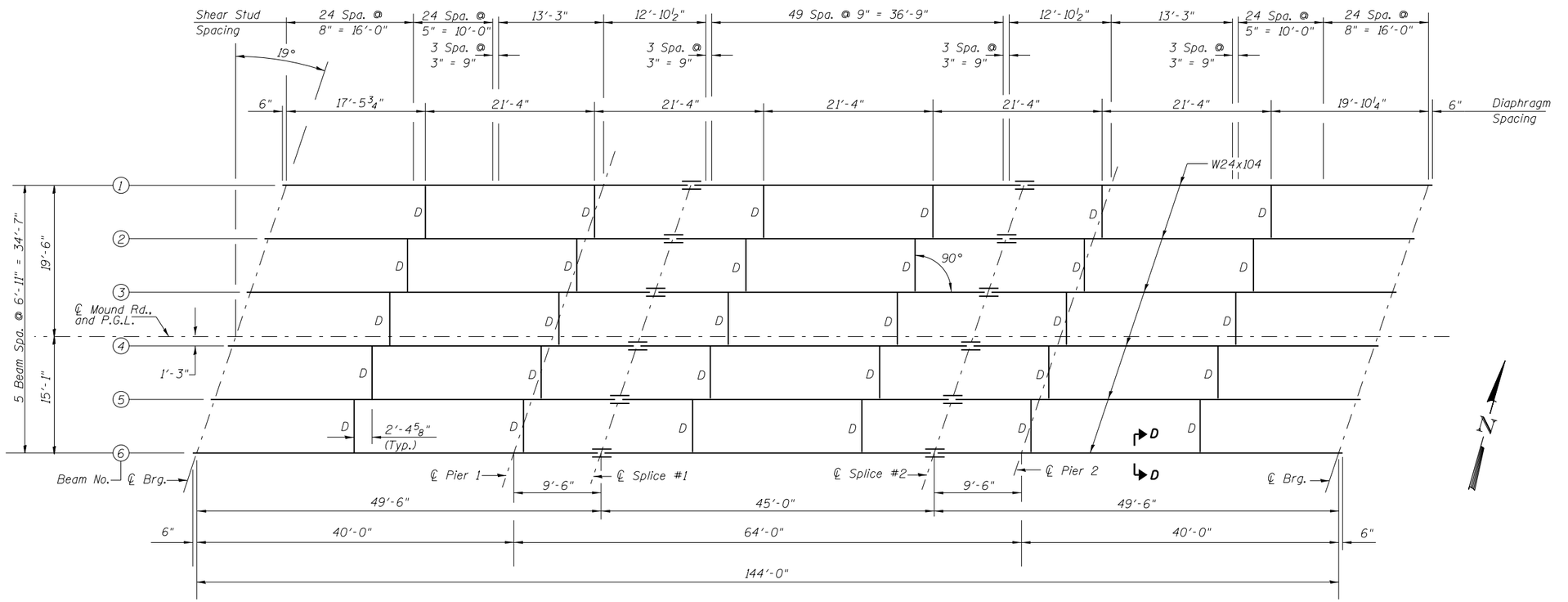
| ROUTE NO. | SEC | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| FAU 8173 | * | MORGAN | 63 | 42 |
| FED. ROAD DIST. NO. 7 | ILLINOIS | PROJECT | | |

SHEET NO. 14 OF 27 SHEETS

* (69-HB)BR

CONTRACT NO. 72837




## FRAMING PLAN

Notes: All beams are W24x104 AASHTO M270, Grade 50 (NTR).
NTR denotes Notch Toughness Requirements.

### INTERIOR GIRDER MOMENT TABLE

| | | 0.4 Sp.1 & 0.6 Sp.3 | Pier | 0.5 Sp. 2 |
|---|---|---|---|---|
| Is | ($in^4$) | 3100 | 3100 | 3100 |
| Ic (n) | ($in^4$) | 9051 | —— | 9051 |
| Ic (3n) | ($in^4$) | 6734 | —— | 6734 |
| Ss | ($in^3$) | 258 | 258 | 258 |
| Sc (n) | ($in^3$) | 387 | —— | 387 |
| Sc (3n) | ($in^3$) | 351 | —— | 351 |
| $\mathcal{D}$ | (k/') | 0.83 | 1.40 | 0.83 |
| $M_{\mathcal{D}}$ | ('k) | 61 | 416 | 179 |
| $s_{\mathcal{D}}$ | (k/') | 0.57 | —— | 0.57 |
| $M_{s\mathcal{D}}$ | ('k) | 42 | —— | 123 |
| $M_{\mathcal{L}}$ | ('k) | 243 | 176 | 389 |
| M (Imp) | ('k) | 73 | 50 | 103 |
| $^5/_3$ [$M_{\mathcal{L}}$+M(Imp)] | ('k) | 527 | 377 | 820 |
| Ma | ('k) | 819 | 1024 | 1463 |
| * Mu | ('k) | 1589 | —— | 1531 |
| $f_s\mathcal{D}$ (non-comp) | (ksi) | 2.8 | 19.4 | 8.3 |
| $f_s\mathcal{D}$ (comp) | (ksi) | 1.4 | —— | 4.2 |
| $f_s{}^5/_3$ ($\mathcal{L}$+Imp) | (ksi) | 16.3 | 17.3 | 25.5 |
| fs (Overload) | (ksi) | 20.6 | 36.6 | 38.1 |
| ** fs (Total) | (ksi) | —— | 47.6 | —— |
| VR | (k) | 48.5 | —— | 41.6 |

* Compact, Braced Section
** Non-Compact Section

### INTERIOR GIRDER REACTION TABLE

| | | Abut. | Pier 1 & 2 |
|---|---|---|---|
| $R_{\mathcal{D}}$ | (k) | 17.6 | 83.3 |
| $R_{\mathcal{L}}$ | (k) | 41.4 | 42.4 |
| Imp. | (k) | 12.4 | 12.0 |
| R (Total) | (k) | 71.4 | 137.7 |

Is and Ss are the moment of inertia and section modulus of the steel section used in computing fs (Total & Overload).

Ic (n) and Sc (n) are the moment of inertia and section modulus of the composite section used in computing stresses due to Live Load.

Ic (3n) and Sc (3n) are the moment of inertia and section modulus of the composite section used in computing stresses due to superimposed dead loads. (See AASHTO 10.38)

VR is the maximum Live Load + Impact shear range in span.

Ma (Applied Moment)=1.3[$M_{\mathcal{D}}$ + $M_{s\mathcal{D}}$ + $^5/_3$ ($M_{\mathcal{L}}$ + M(Imp.))]

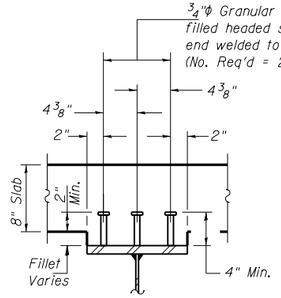
The Plastic Moment capacity (Mu) is computed according to AASHTO 10.48.1 and 10.50.1.1

fs (Overload) is the sum of the stresses due to $_{\mathcal{D}}M$ +$M_{s\mathcal{D}}$ +$^5/_3$($M_{\mathcal{L}}$ + M(Imp)).

fs (Total) (Non-compact section) is the sum of the stresses due to 1.3[$M_{\mathcal{D}}$ + $M_{s\mathcal{D}}$ +$^5/_3$ ($M_{\mathcal{L}}$ + M(Imp.))].

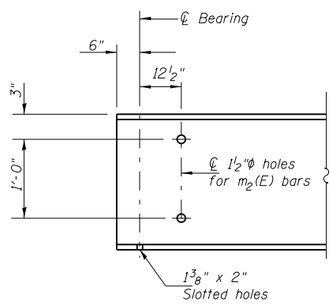
### TOP OF BEAM ELEVATIONS (FOR FABRICATION ONLY)

| | Beam #1 | Beam #2 | Beam #3 | Beam #4 | Beam #5 | Beam #6 |
|---|---|---|---|---|---|---|
| ℄ Brg. W. Abut. | 667.89 | 668.03 | 668.13 | 668.19 | 668.07 | 667.94 |
| ℄ Pier 1 | 667.99 | 668.12 | 668.23 | 668.29 | 668.17 | 668.04 |
| ℄ Splice 1 | 668.01 | 668.15 | 668.25 | 668.31 | 668.19 | 668.06 |
| ℄ Splice 2 | 668.17 | 668.31 | 668.41 | 668.47 | 668.36 | 668.22 |
| ℄ Pier 2 | 668.22 | 668.35 | 668.46 | 668.52 | 668.40 | 668.27 |
| ℄ Brg. E. Abut. | 668.41 | 668.55 | 668.65 | 668.71 | 668.59 | 668.46 |

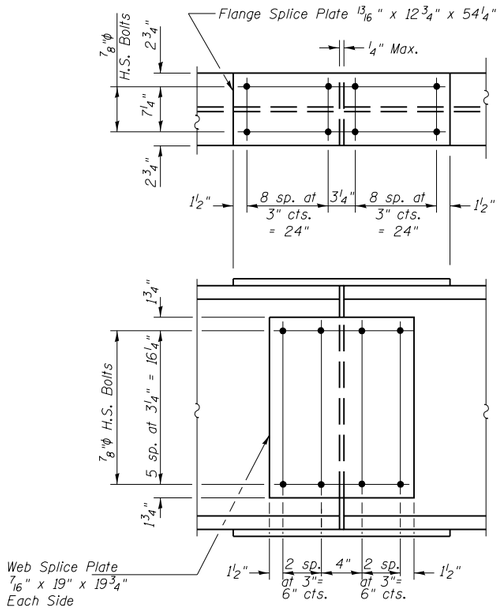



## SECTION D-D

| | |
|---|---|
| DESIGNED | JOH / BAN |
| CHECKED | BAN / JOH |
| DRAWN | TD |
| CHECKED | BAN |



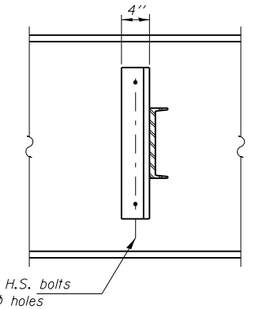

## TYPICAL END OF BEAM DETAIL

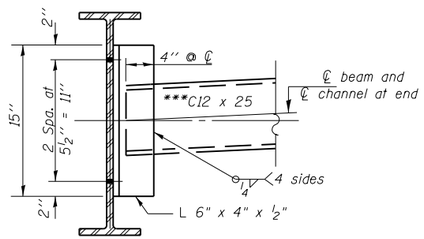



## DETAIL OF SPLICE

12 req'd

All splice plates shall be AASHTO M270, Grade 50 (NTR)




*** A C12x30 channel is permitted to facilitate material acquisition. Calculated weight of structural steel is based on the lighter section.

## DIAPHRAGM D

30 Required
(M270 Grade 36)

Note: Two hardened washers shall be required over all oversized holes.

# STRUCTURAL STEEL DETAILS
# MOUND ROAD (FAU ROUTE 8173)
# OVER ILLINOIS ROUTE 104
# SECTION (69-HB)BR
# MORGAN COUNTY
# STATION 100+00.00
# STRUCTURE NO. 069-0521


HU CHISON ENGINEERING, INC.
JACKSONVILLE, ILLINOIS


Date: 12/21/07

2280-2b114