

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

| | | | | | |
|-----------------------|----------|-------------------|------|-------|---------------------------|
| ROUTE NO. | SECTION | COUNTY | LETS | SHEET | SHEET NO. 15 31 SHEETS |
| F.A.P. 308 | * | ROCK ISLAND | 210 | 99 | |
| FED. ROAD DIST. NO. 7 | ILLINOIS | FED. AID PROJECT- | | | |

Contract #64814 * (1HB, HB-1, VB, HB-2)R

| | | 0.3 Sp. 1 or 0.7 Sp. 3 | Pier | 0.5 Span 2 |
|--------------------------------|--------------------|------------------------|------|------------|
| I_s | (in ⁴) | 3990 | 3990 | 3990 |
| $I_c(n)$ | (in ⁴) | - | - | 11469 |
| $I_c(3n)$ | (in ⁴) | - | - | 8731 |
| S_s | (in ³) | 269 | 269 | 269 |
| $S_c(n)$ | (in ³) | - | - | 407 |
| $S_c(3n)$ | (in ³) | - | - | 371 |
| Z | (in ³) | 312 | 312 | - |
| $\bar{\rho}$ | (k'/') | 1.39 | 1.39 | 0.89 |
| $M\bar{\rho}$ | (k) | 26 | 367 | 203 |
| $s\bar{\rho}$ | (k'/') | - | - | 0.50 |
| $M_s\bar{\rho}$ | (k) | - | - | 140 |
| M_L | (k) | 162 | 184 | 425 |
| M_{Imp} | (k) | 48 | 53 | 113 |
| $\bar{\rho}_s [M_L + M_{Imp}]$ | (k) | 350 | 395 | 897 |
| M_a | (k) | 489 | 991 | 1612 |
| M_u | (k) | 1121 | 1121 | 2085 |
| $f_s \bar{\rho}$ (nc) | (ksi) | 1.2 | 16.4 | 9.1 |
| $f_s \bar{\rho}$ (c) | (ksi) | - | - | 4.5 |
| f_s (Overload) | (ksi) | 16.8 | 34.0 | 40.0 |
| f_s (Total) | (ksi) | - | - | - |
| VR | (k) | 55.9 | - | 48.9 |

| | | S. Abut. | Pier 1 | Pier 2 | N. Abut. |
|---------------|-----|----------|--------|--------|----------|
| $R\bar{\rho}$ | (k) | 10.1 | 77.8 | 77.8 | 10.1 |
| $R\bar{\rho}$ | (k) | 37.0 | 51.0 | 51.0 | 37.0 |
| Imp. | (k) | 11.1 | 11.6 | 11.6 | 11.1 |
| R_{Total} | (k) | 58.3 | 140.4 | 140.4 | 58.3 |

* Compact section
** Braced non-compact and partially braced section

TOP OF BEAM ELEVATIONS
(For Fabrication only)

| BEAM | ☉ S. Abut. | ☉ Pier 1 | Splice 1 | Splice 2 | ☉ Pier 2 | ☉ N. Abut. |
|------|------------|----------|----------|----------|----------|------------|
| 1 | 581.03 | 581.04 | 581.04 | 580.92 | 580.89 | 580.73 |
| 2 | 581.17 | 581.19 | 581.20 | 581.09 | 581.06 | 580.91 |
| 3 | 581.28 | 581.31 | 581.32 | 581.23 | 581.20 | 581.06 |
| 4 | 581.33 | 581.37 | 581.38 | 581.31 | 581.28 | 581.15 |
| 5 | 581.20 | 581.25 | 581.26 | 581.20 | 581.17 | 581.05 |
| 6 | 581.04 | 581.10 | 581.11 | 581.07 | 581.04 | 580.93 |
| 7 | 580.80 | 580.92 | 580.95 | 581.02 | 581.01 | 580.97 |
| 8 | 580.91 | 581.05 | 581.08 | 581.17 | 581.16 | 581.13 |
| 9 | 581.00 | 581.15 | 581.19 | 581.29 | 581.28 | 581.26 |
| 10 | 580.91 | 581.07 | 581.11 | 581.23 | 581.22 | 581.21 |
| 11 | 580.76 | 580.93 | 580.98 | 581.10 | 581.10 | 581.10 |
| 12 | 580.57 | 580.75 | 580.79 | 580.94 | 580.95 | 580.95 |

| | |
|----------|---------|
| DESIGNED | CMM/JSD |
| CHECKED | JSD |
| DRAWN | EF |
| CHECKED | AMK |

LOCHNER
H.W. LOCHNER, INC., CHICAGO, ILLINOIS

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 (in⁴ and in³).

$I_c(n), S_c(n)$: 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 (in⁴ and in³).

$I_c(3n), S_c(3n)$: 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 (in⁴ and in³).

Z : Plastic Section Modulus of the steel section in non-composite areas (in³).

$\bar{\rho}$: Un-factored non-composite dead load (kips/ft.).

$M\bar{\rho}$: Un-factored moment due to non-composite dead load (kip-ft.).

$s\bar{\rho}$: Un-factored long-term composite (superimposed) dead load (kips/ft.).

$M_s\bar{\rho}$: Un-factored moment due to long-term composite (superimposed) dead load (kip-ft.).

M_L : Un-factored live load moment (kip-ft.).

M_{Imp} : Un-factored moment due to impact (kip-ft.).

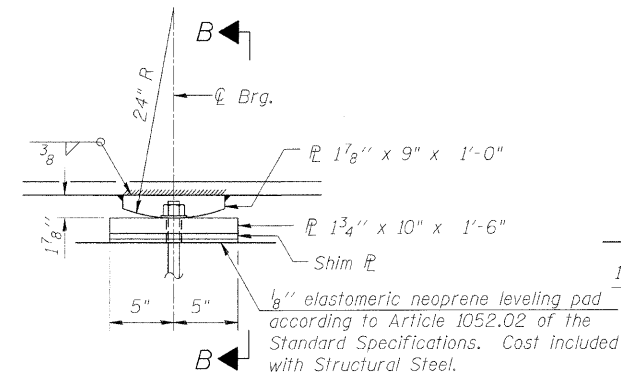
M_a : Factored design moment (kip-ft.).
 $1.3 [M\bar{\rho} + M_s\bar{\rho} + \frac{5}{3} (M_L + M_{Imp})]$

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.).

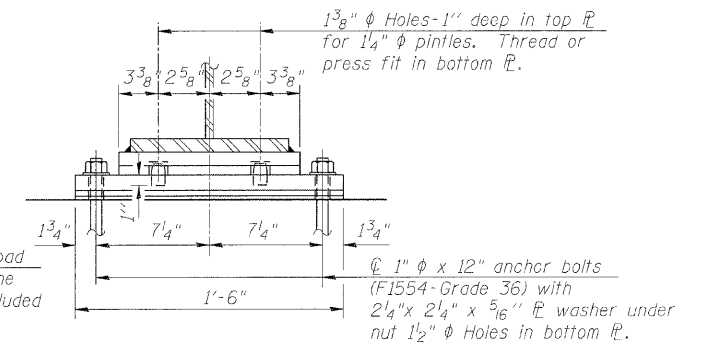
f_s (Overload): Sum of stresses as computed from the moments below (ksi).
 $M\bar{\rho} + M_s\bar{\rho} + \frac{5}{3} (M_L + M_{Imp})$

f_s (Total): Sum of stresses as computed from the moments below on non-compact section (ksi).
 $1.3 [M\bar{\rho} + M_s\bar{\rho} + \frac{5}{3} (M_L + M_{Imp})]$

VR: Maximum $\bar{\rho}$ + impact horizontal shear range within the composite portion of the span for stud shear connector design (kips).



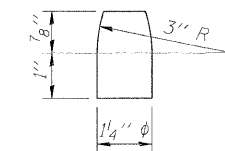
ELEVATION AT PIERS



SECTION B-B

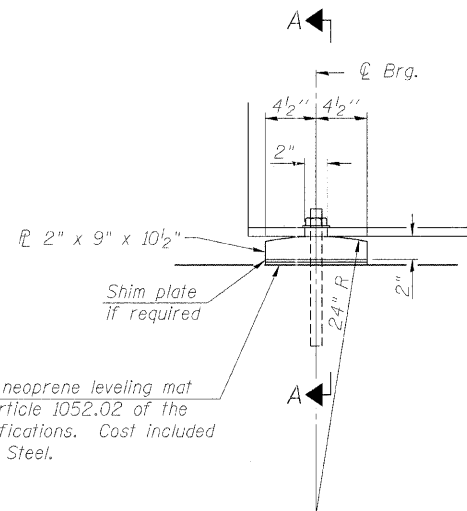
FIXED BEARING

(24 Required)



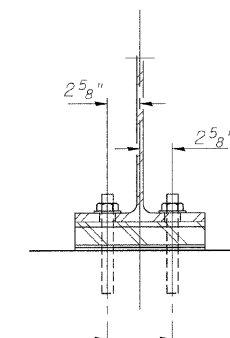
PINTLE

Notes:
Anchor bolts shall be ASTM F1554 all-thread (or an Engineer-approved alternate material) of the grade(s) and diameter(s) specified. ASTM A307 Grade C anchor bolts may be used in lieu of ASTM F1554 Grade 36 (Fy=36ksi). The corresponding specified grade of AASHTO M314 anchor bolts may be used in lieu of ASTM F1554.
Anchor bolts at fixed bearings may be either cast in place or installed in holes drilled after the supported member is in place.
Drilled and set anchor bolts shall be installed according to Article 521.06 of the Standard Specifications.



INTEGRAL ABUTMENT BEARINGS

(24 Required)



SECTION A-A

SHIM PLATE THICKNESS

Value provided is the total required height of shims

| BEAM | S. Abut. | Pier 1 | N. Abut. |
|------|----------|--------|----------|
| 4 | 5/8" | 5/8" | |
| 9 | | | 5/8" |

BILL OF MATERIAL

| Item | Unit | Total |
|------------------|------|-------|
| Anchor Bolts, 1" | Each | 96 |

NOTES

- For framing plan see Sheet No. 13
- For beam elevation see Sheet No. 14
- All steel for the bearings, except for anchor bolts or as noted otherwise, shall conform to the requirements of AASHTO M270 Grade 36.
- Two 1/8 in. adjusting shims shall be provided for each bearing in addition to all other plates or shims and placed as shown on bearing details.

STEEL DETAILS 2
IL ROUTE 92 (CENTENNIAL EXPRESSWAY)
OVER 31st AVENUE
FAP ROUTE 308 SEC. 1(HB-2)R
ROCK ISLAND COUNTY
STATION 1470+70.31
STRUCTURE NO. 081-0172 (SB)
STRUCTURE NO. 081-0173 (NB)