

INTERIOR GIRDER MOMENT TABLE (UNIT 2-GIRDER 7)

| Property | Unit | 0.4 Span 7 | Pier 7 | 0.5 Span 8 | Pier 8 | 0.6 Span 9 |
|----------------------------|------------|------------|--------|------------|--------|------------|
| I_s | (in^4) | 37,670 | 60,215 | 37,670 | 60,215 | 37,670 |
| $I_{c(n)}$ | (in^4) | 80,675 | --- | 80,675 | --- | 80,675 |
| $I_{c(3n)}$ | (in^4) | 58,495 | --- | 58,495 | --- | 58,495 |
| S_s | (in^3) | 1,704 | 2,316 | 1,704 | 2,316 | 1,704 |
| $S_{c(n)}$ | (in^3) | 2,137 | --- | 2,137 | --- | 2,137 |
| $S_{c(3n)}$ | (in^3) | 1,969 | --- | 1,969 | --- | 1,969 |
| Z | (in^3) | --- | 2,524 | --- | 2,524 | --- |
| \bar{Q} | ($K/'$) | 1.141 | 1.716 | 1.141 | 1.716 | 1.141 |
| M_p | ($'K$) | 1,101 | 2,761 | 612 | 2,940 | 1,211 |
| s_p | ($K/'$) | 0.446 | --- | 0.446 | --- | 0.446 |
| M_{s_p} | ($'K$) | 451 | --- | 294 | --- | 497 |
| M_t | ($'K$) | 1,179 | 1,129 | 1,127 | 1,165 | 1,235 |
| M (Imp) | ($'K$) | 244 | 224 | 216 | 230 | 249 |
| $S_3[M_t + M_{imp}]$ | ($'K$) | 2,372 | 2,255 | 2,238 | 2,325 | 2,473 |
| M_a | ($'K$) | 5,101 | 6,521 | 4,088 | 6,845 | 5,436 |
| M_u | ($'K$) | 9,902 | 10,517 | 9,902 | 10,517 | 9,902 |
| f_s non-comp | (Ksi) | 7.75 | 14.31 | 4.31 | 15.23 | 8.53 |
| f_s p (comp) | (Ksi) | 2.75 | --- | 1.79 | --- | 3.03 |
| f_s $S_3[M_t + M_{imp}]$ | (Ksi) | 13.32 | 11.68 | 12.57 | 12.05 | 13.89 |
| f_s (Overload) | (Ksi) | 23.82 | 25.99 | 18.67 | 27.28 | 25.45 |
| f_s (Total) | (Ksi) | --- | --- | --- | --- | --- |
| VR | (K) | 72.4 | --- | 58.9 | --- | 72.0 |

* Compact section
 ** Braced noncompact and partially braced section

INTERIOR GIRDER REACTION TABLE (UNIT 2-GIRDER 7)

| Reaction | Unit | Pier 6-N | Pier 7 | Pier 8 | Pier 9-S |
|-------------|---------|----------|--------|--------|----------|
| R_p | (K) | 71.0 | 227.6 | 234.7 | 74.4 |
| R_t | (K) | 54.7 | 93.3 | 94.7 | 54.9 |
| R (Imp) | (K) | 11.3 | 18.6 | 18.7 | 11.1 |
| R (Total) | (K) | 137.0 | 339.5 | 348.1 | 140.4 |

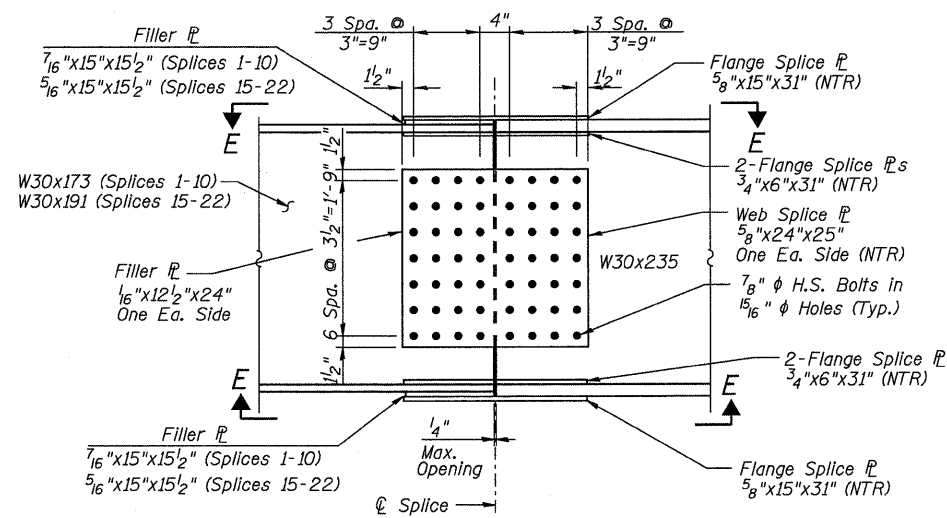
INTERIOR GIRDER MOMENT TABLE (UNIT 2-GIRDER 11)

| Property | Unit | 0.4 Span 7 | Pier 7 | 0.5 Span 8 | Pier 8 | 0.6 Span 9 |
|----------------------------|------------|------------|--------|------------|--------|------------|
| I_s | (in^4) | 37,670 | 60,215 | 37,670 | 60,215 | 37,670 |
| $I_{c(n)}$ | (in^4) | 80,675 | --- | 80,675 | --- | 80,675 |
| $I_{c(3n)}$ | (in^4) | 58,495 | --- | 58,495 | --- | 58,495 |
| S_s | (in^3) | 1,704 | 2,316 | 1,704 | 2,316 | 1,704 |
| $S_{c(n)}$ | (in^3) | 2,137 | --- | 2,137 | --- | 2,137 |
| $S_{c(3n)}$ | (in^3) | 1,969 | --- | 1,969 | --- | 1,969 |
| Z | (in^3) | --- | 2,524 | --- | 2,524 | --- |
| \bar{Q} | ($K/'$) | 1.141 | 1.953 | 1.141 | 1.953 | 1.141 |
| M_p | ($'K$) | 754 | 2,331 | 509 | 4,219 | 1,738 |
| s_p | ($K/'$) | 0.683 | --- | 0.683 | --- | 0.683 |
| M_{s_p} | ($'K$) | 465 | --- | 394 | --- | 1,098 |
| M_t | ($'K$) | 969 | 1,008 | 1,097 | 1,338 | 1,465 |
| M (Imp) | ($'K$) | 217 | 211 | 212 | 254 | 274 |
| $S_3[M_t + M_{imp}]$ | ($'K$) | 1,977 | 2,032 | 2,182 | 2,653 | 2,898 |
| M_a | ($'K$) | 4,154 | 5,671 | 4,010 | 8,934 | 7,455 |
| M_u | ($'K$) | 9,902 | 10,517 | 9,902 | 10,517 | 9,902 |
| f_s non-comp | (Ksi) | 5.31 | 12.08 | 3.58 | 21.86 | 12.24 |
| f_s p (comp) | (Ksi) | 2.83 | --- | 2.40 | --- | 6.69 |
| f_s $S_3[M_t + M_{imp}]$ | (Ksi) | 11.10 | 10.53 | 12.25 | 13.75 | 16.28 |
| f_s (Overload) | (Ksi) | 19.24 | 22.60 | 18.24 | 35.61 | 35.21 |
| f_s (Total) | (Ksi) | --- | --- | --- | --- | --- |
| VR | (K) | 74.0 | --- | 58.9 | --- | 70.8 |

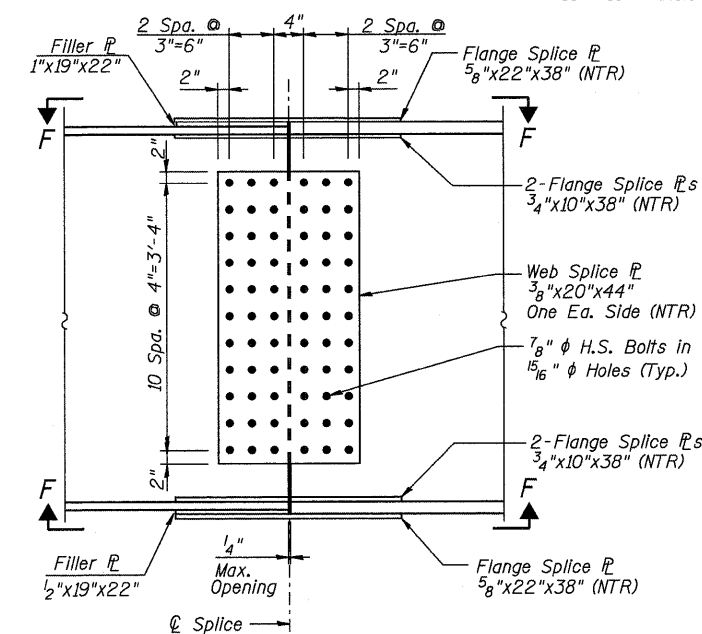
* Compact section
 ** Braced noncompact and partially braced section

INTERIOR GIRDER REACTION TABLE (UNIT 2-GIRDER 11)

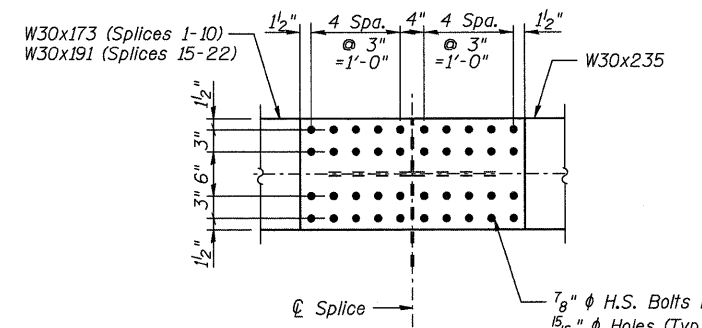
| Reaction | Unit | Pier 6-N | Pier 7 | Pier 8 | Pier 9-S |
|-------------|---------|----------|--------|--------|----------|
| R_p | (K) | 67.5 | 225.9 | 300.7 | 102.4 |
| R_t | (K) | 53.8 | 87.8 | 100.8 | 55.7 |
| R (Imp) | (K) | 12.1 | 18.3 | 19.2 | 10.4 |
| R (Total) | (K) | 133.4 | 332.0 | 420.7 | 168.5 |



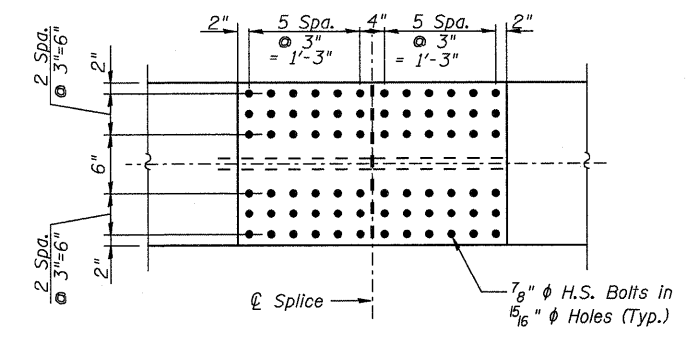
TYPICAL SPLICE ELEVATION (Splices 1-10, 15-22)



TYPICAL SPLICE ELEVATION (Splices 11-14)



VIEW E-E



VIEW F-F

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).
 Z: Plastic Section Modulus of the steel section in non-composite areas (in^3).
 \bar{Q} : Un-factored non-composite dead load (kips/ft.).
 M_p : Un-factored moment due to non-composite dead load (kip-ft.).
 s_p : Un-factored long-term composite (superimposed) dead load (kips/ft.).

M_{s_p} : Un-factored moment due to long-term composite (superimposed) dead load (kip-ft.).
 M_t : Un-factored live load moment (kip-ft.).
 M_{imp} : Un-factored moment due to impact (kip-ft.).
 M_a : Factored design moment (kip-ft.).
 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).
 f_s (Total): Sum of stresses as computed from the moments below on non-compact section (ksi).
 VR: Maximum \bar{Q} + impact horizontal shear range within the composite portion of the span for stud shear connector design (kips).

- Notes:**
- See Sheets S24-S26 for splice locations.
 - AASHTO M270 Grade 50 steel shall be used for all splice plates.
 - Load carrying components designated "NTR" shall conform to the Supplemental Requirements for Notch Toughness (Zone 2) including all splice plate material (except fill plates).
 - H.S. bolts for splices shall be 7/8" φ AASHTO M164/ASTM A325 H.S. bolts (Type 1) in 15/16" φ standard size holes.
 - Design of the H.S. bolts assumes threads in the shear plane and a Class A surface for slip resistance.

| REVISIONS | |
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| NAME | DATE |
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ILLINOIS DEPARTMENT OF TRANSPORTATION

STEEL DETAILS II

FAP 330 US 12/45 (MANNHEIM RD.) OVER
 SOO LINE RR & FRANKLIN AVE.
 STRUCTURE NO. 016-2815

SECTION 465 (HB & VB) F COOK COUNTY
 STA. 183+33.30 DRAWN BY JHR
 DATE 6/2009 CHECKED BY CLS

EARTH TECH | AECOM