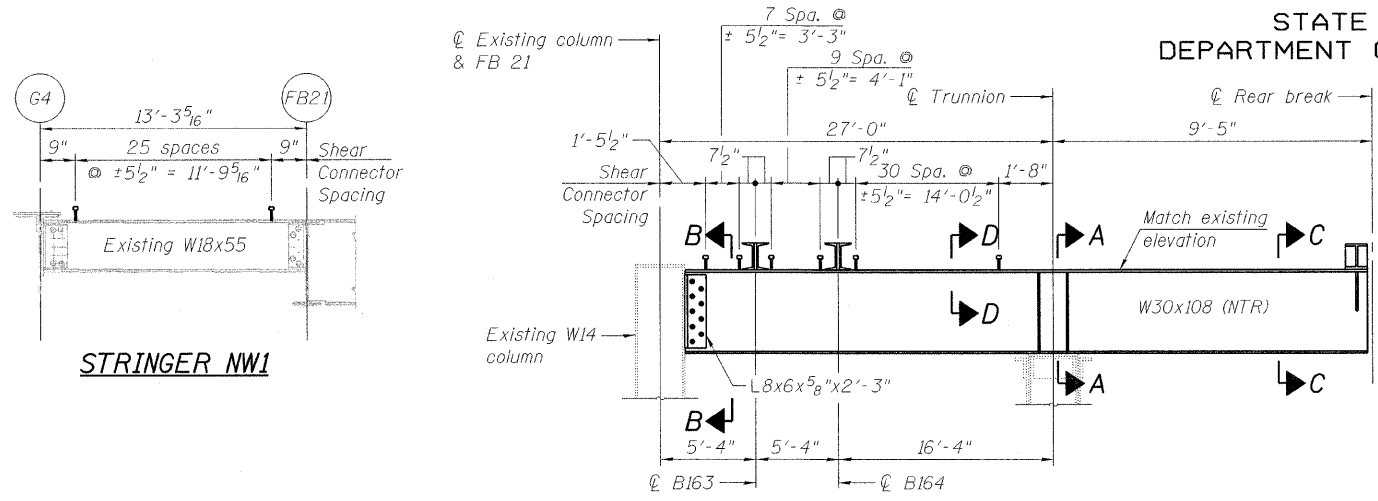
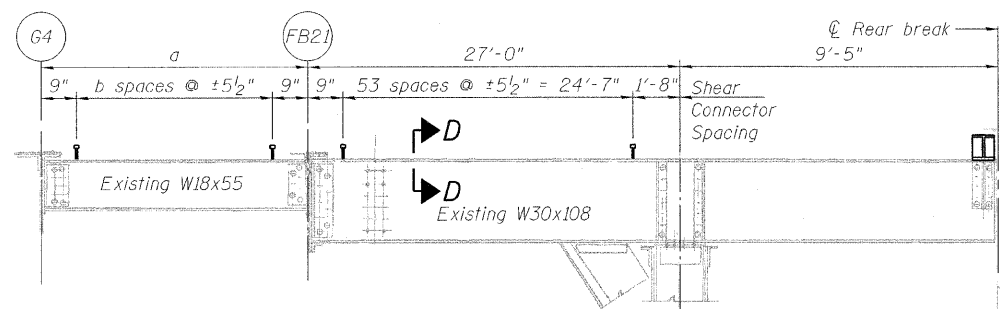


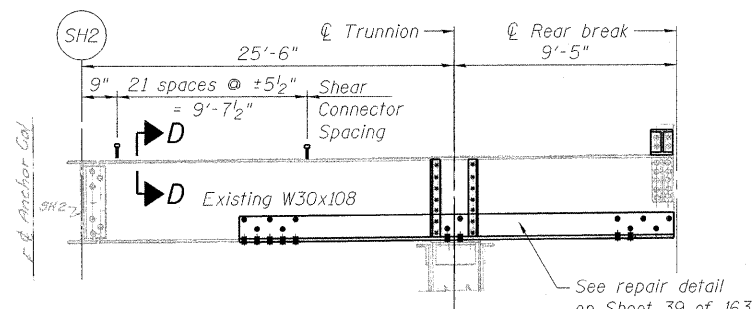
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



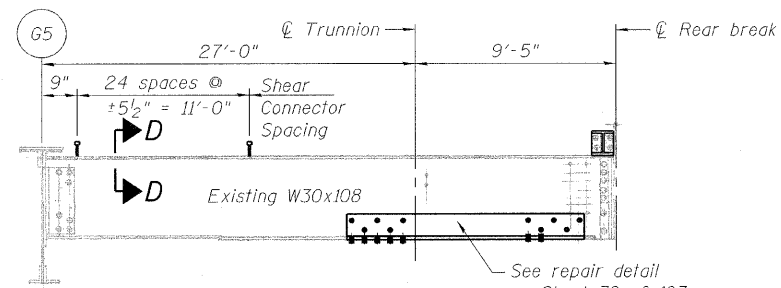
STRINGER NW2



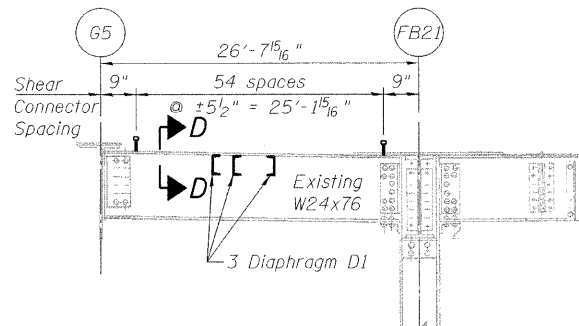
STRINGER NW3 TO NW8



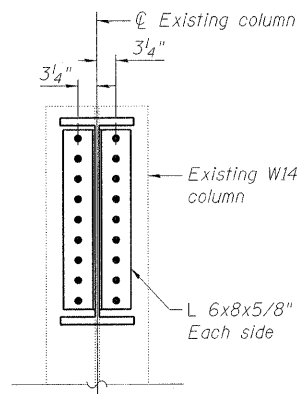
STRINGER NW9



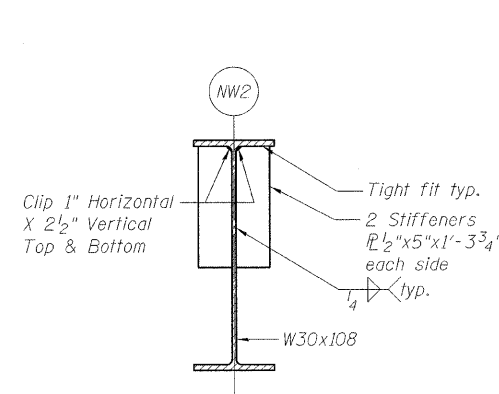
STRINGER NW10



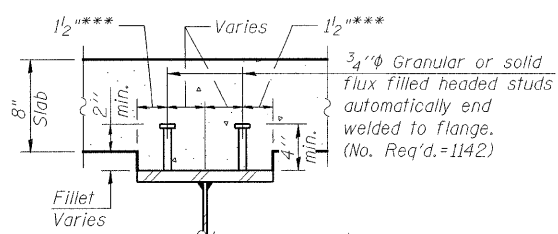
STRINGER NW11



SECTION B-B



SECTION C-C



SECTION D-D

*** Min.

- 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).
- Q : Un-factored non-composite dead load (kips/ft.).
- M_Q : Un-factored moment due to non-composite dead load (kip-ft.).
- s_Q : Un-factored long-term composite (superimposed) dead load (kips/ft.).
- M_{sQ} : Un-factored moment due to long-term composite (superimposed) dead load (kip-ft.).
- M_L : Un-factored live load moment (kip-ft.).
- M_I : Un-factored moment due to impact (kip-ft.).
- M_o : Factored design moment (kip-ft.).
- $1.3 [M_Q + M_{sQ} + \frac{5}{3} (M_L + M_I)]$
- 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). $M_Q + M_{sQ} + \frac{5}{3} (M_L + M_I)$
- f_s (Total): Sum of stresses as computed from the moments below on non-compact section (ksi). $1.3 [M_Q + M_{sQ} + \frac{5}{3} (M_L + M_I)]$
- VR: Maximum M_L + impact horizontal shear range within the composite portion of the span for stud shear connector design (kips).

| INTERIOR GIRDER MOMENT TABLE | | | |
|-------------------------------|--------------------|------------|--------------|
| | | 0.4 Span 1 | Cross Girder |
| I_s | (in ⁴) | 4470 | 4470 |
| $I_c(n)$ | (in ⁴) | 11275 | -- |
| $I_c(3n)$ | (in ⁴) | 8293 | -- |
| S_s | (in ³) | 300 | 300 |
| $S_c(n)$ | (in ³) | 430 | -- |
| $S_c(3n)$ | (in ³) | 388 | -- |
| Z | (in ³) | -- | -- |
| Q | (k/ft) | 0.6 | 0.74 |
| M_Q | (k) | 40 | 39 |
| s_Q | (k/ft) | 0.14 | -- |
| M_{sQ} | (k) | 10 | -- |
| M_L | (k) | 101 | 144 |
| M_I | (k) | 30 | 43 |
| $\frac{5}{3} [M_L + M_I]$ | (k) | 220 | 311 |
| M_o | (k) | 350 | 455 |
| M_u | (k) | 1490 | -- |
| f_s non-comp | (ksi) | 1.6 | 1.5 |
| f_s comp | (ksi) | 0.3 | -- |
| $f_s \frac{5}{3} [M_L + M_I]$ | (ksi) | 8.8 | 12.5 |
| f_s (Overload) | (ksi) | 10.7 | 14.0 |
| f_s (Total) | (ksi) | -- | 18.2 |
| VR | (k) | 33.0 | -- |

| INTERIOR GIRDER REACTION TABLE | | | |
|--------------------------------|-----|-----------------|--------------|
| | | Floorbeam 21-21 | Cross Girder |
| R_Q | (k) | 9.3 | 19.2 |
| R_L | (k) | 20.1 | 31.8 |
| R_I | (k) | 6.0 | 9.6 |
| R_{Total} | (k) | 35.4 | 60.6 |

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

Beam Length and Shear Connector Spacing

| Stringer | a | b |
|----------|-------------|----|
| NW3 | 11'-4 1/16" | 21 |
| NW4 | 9'-6 9/16" | 17 |
| NW5 | 7'-7 1/2" | 13 |
| NW6 | 5'-8 5/16" | 9 |
| NW7 | 3'-10 5/16" | 5 |
| NW8 | 0 | 0 |

LEGEND

- Existing fastener to remain
- Hole to match existing location
- New hole
- Existing member to remain
- New member

Notes:
Portions of this drawing are extracted from original drawings for this bridge. Details shown are provided to illustrate the work to be performed.
Load carrying components designated "NTR" shall conform to the supplemental requirements for Notch Toughness, Zone 2.
For Section A-A, see sheet 35 of 163.

| | |
|----------|-------------|
| DESIGNED | A. HAMMAD |
| CHECKED | J. GRAINAWI |
| DRAWN | D. C. PATEL |
| CHECKED | A. HAMMAD |

PB Americas, Inc.
230 WEST MONROE STREET,
SUITE 900
CHICAGO, IL. 60606

| SHEET NO. 38 | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|-----------------------|-----------|------------------|--------------------|-----------|
| 163 SHEETS | 2424.2B-R | COOK | 398 | 119 |
| FED. ROAD DIST. NO. 7 | | ILLINOIS | CONTRACT NO. 60D61 | |
| | | FED. AID PROJECT | | |

FRAMING DETAILS
NORTHWEST FIXED SPANS
STRUCTURE NO. 016-2445