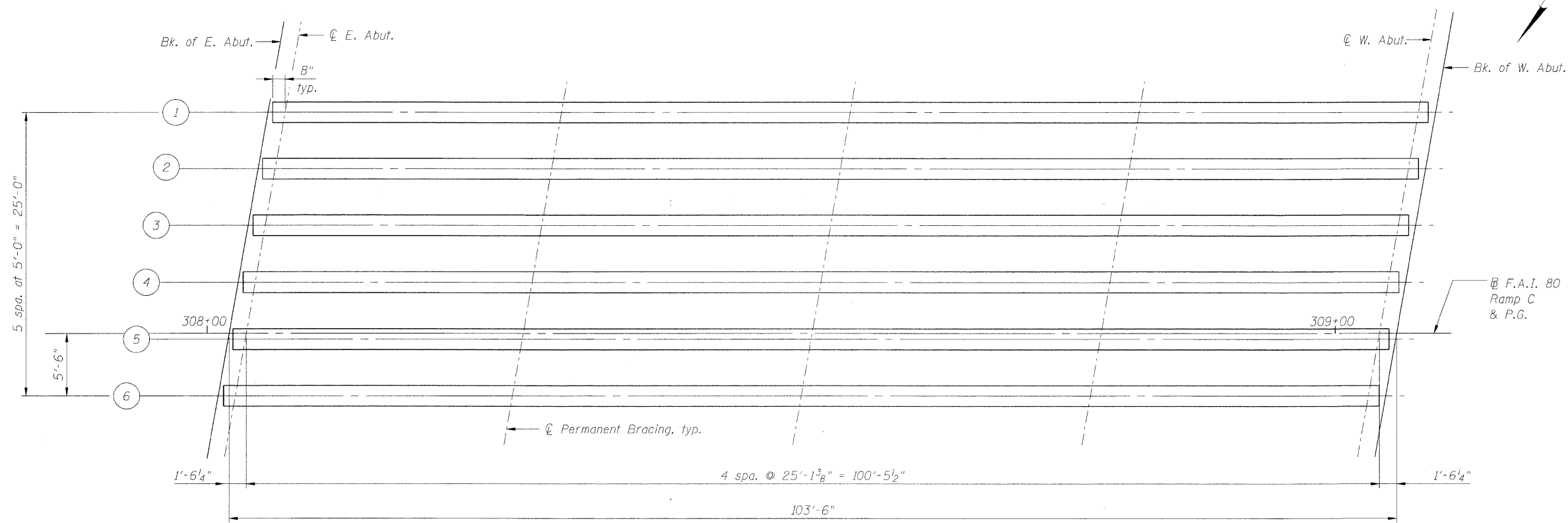
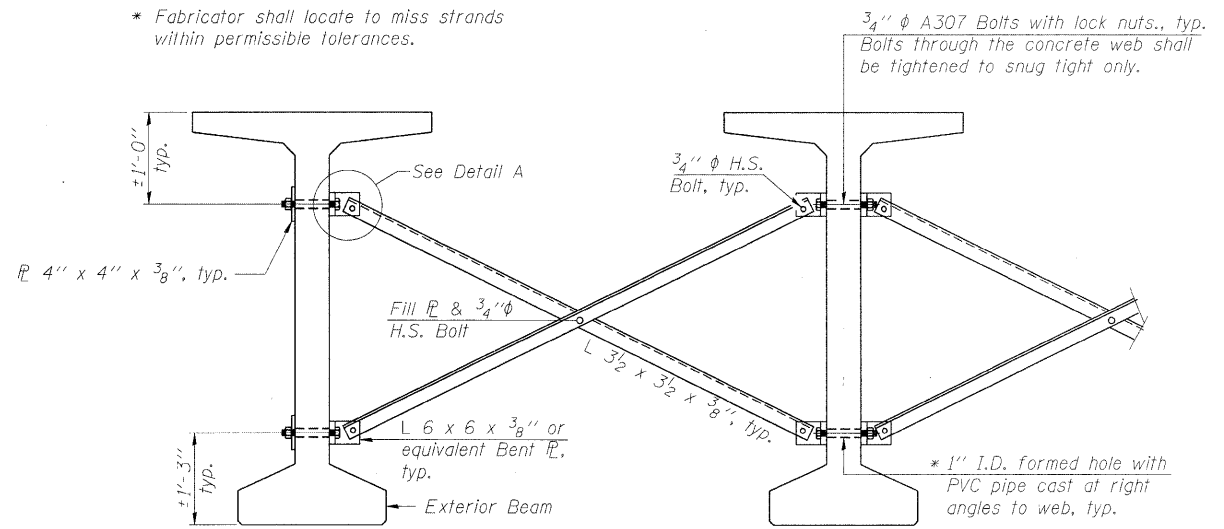


STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



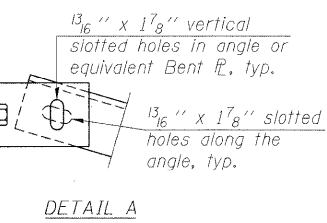
FRAMING PLAN

\* Fabricator shall locate to miss strands within permissible tolerances.



Notes:  
All material for bracing shall be hot dip galvanized according to AASHTO M111 unless otherwise noted.  
Two hardened washers are required for each set of oversized holes.  
All holes shall be  $\frac{13}{16}$ "  $\phi$  unless otherwise noted.  
 $\frac{5}{16}$ " x 3" x 3" plate washers are required over all slotted holes.  
All bolts shall be galvanized according to AASHTO M232.  
Bracing shall be installed as beams are erected and tightened as soon as possible during erection.  
Permanent bracing shall not be paid for separately, but shall be included in the cost of Furnishing and Erecting Precast Prestressed Concrete Bulb T-Beams.

PERMANENT BRACING DETAILS  
FOR BULB-T BEAMS



DETAIL A

| INTERIOR BEAM MOMENT TABLE |                            |
|----------------------------|----------------------------|
| 0.5 Span                   |                            |
| I                          | (in <sup>4</sup> ) 392,638 |
| I'                         | (in <sup>4</sup> ) 740,825 |
| S <sub>b</sub>             | (in <sup>3</sup> ) 12,224  |
| S <sub>b</sub> '           | (in <sup>3</sup> ) 16,260  |
| S <sub>t</sub>             | (in <sup>3</sup> ) 12,715  |
| S <sub>t</sub> '           | (in <sup>3</sup> ) 42,478  |
| DC1                        | (k/ft) 1.32                |
| M <sub>DC1</sub>           | (k) 1668.4                 |
| DC2                        | (k/ft) 0.15                |
| M <sub>DC2</sub>           | (k) 189.4                  |
| DW                         | (k/ft) 0.22                |
| M <sub>DW</sub>            | (k) 273.5                  |
| M <sub>L + IM</sub>        | (k) 1429.3                 |

| INTERIOR BEAM REACTION TABLE |           |
|------------------------------|-----------|
| R <sub>DC1</sub>             | (k) 66.4  |
| R <sub>DC2</sub>             | (k) 7.5   |
| R <sub>DW</sub>              | (k) 10.9  |
| R <sub>L + IM</sub>          | (k) 119.0 |
| R <sub>Total</sub>           | (k) 203.8 |

I: Non-composite moment of inertia of beam section (in.<sup>4</sup>).  
I': Composite moment of inertia of beam section (in.<sup>4</sup>).  
S<sub>b</sub>: Non-composite section modulus for the bottom fiber of the prestressed beam (in.<sup>3</sup>).  
S<sub>b</sub>': Composite section modulus for the bottom fiber of the prestressed beam (in.<sup>3</sup>).  
S<sub>t</sub>: Non-composite section modulus for the top fiber of the prestressed beam (in.<sup>3</sup>).  
S<sub>t</sub>': Composite section modulus for the top fiber of the prestressed beam (in.<sup>3</sup>).  
DC1: Un-factored non-composite dead load (kips/ft.).  
M<sub>DC1</sub>: 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<sub>DC2</sub>: 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<sub>DW</sub>: Un-factored moment due to long-term composite (superimposed future wearing surface only) dead load (kip-ft.).  
M<sub>L + IM</sub>: Un-factored live load moment plus dynamic load allowance (impact) (kip-ft.).

|            |     |
|------------|-----|
| DESIGNED - | LJB |
| CHECKED -  | CMM |
| DRAWN -    | GJS |
| CHECKED -  | CMM |

**LOCHNER**  
H.W. LOCHNER, INC.  
CONSULTING ENGINEERS & PLANNERS  
20 NORTH WACKER DRIVE SUITE 1200  
CHICAGO, IL 60606

|                                 |      |                        |                  |              |           |
|---------------------------------|------|------------------------|------------------|--------------|-----------|
| SHEET NO.<br>11 OF 19<br>SHEETS | RTE. | SECTION                | COUNTY           | TOTAL SHEETS | SHEET NO. |
|                                 | *    | (32,47-4) HBK-4 & G(N) | GRUNDY           | 351          | 343       |
| CONTRACT NO. 66408              |      |                        |                  |              |           |
| FED. ROAD DIST. NO.             |      | ILLINOIS               | FED. AID PROJECT |              |           |

\* FAI 80 & FAS 297 / FAU 392

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