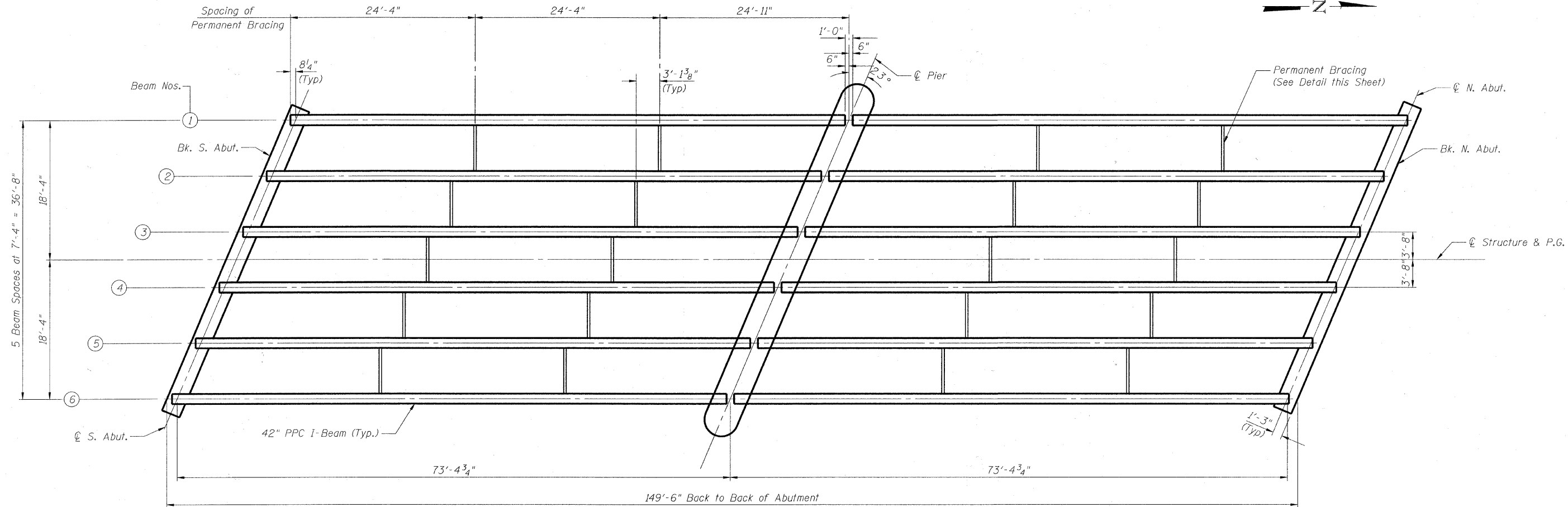
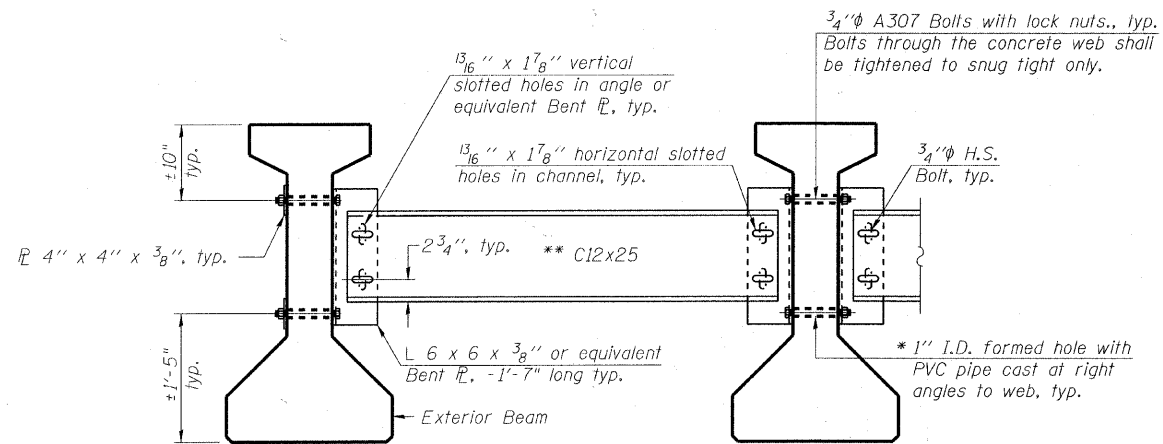


MCHENRY COUNTY  
DIVISION OF TRANSPORTATION



**FRAMING PLAN**



**PERMANENT BRACING DETAILS FOR  
42" PPC I-BEAMS**

- \* Fabricator shall locate to miss strands within permissible tolerances.
- \*\* Alternate C12x30 channels are permitted to facilitate material acquisition.

**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 1/2" unless otherwise noted. 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 I-Beams.

|                    | 0.4 Sp. 1                 | 0.6 Sp. 2 | Pier   |
|--------------------|---------------------------|-----------|--------|
| $I$                | (in <sup>4</sup> ) 90956  |           | 90956  |
| $I'$               | (in <sup>4</sup> ) 287120 |           | 287120 |
| $S_b$              | (in <sup>3</sup> ) 5153   |           | 5153   |
| $S_b'$             | (in <sup>3</sup> ) 8878   |           | 8878   |
| $S_t$              | (in <sup>3</sup> ) 3736   |           | 3736   |
| $S_t'$             | (in <sup>3</sup> ) 29723  |           | 29723  |
| DC1                | (k/ft) 1.243              |           | 1.243  |
| M <sub>DC1</sub>   | (k) 803.6                 |           | 0      |
| DC2                | (k/ft) 0.075              |           | 0.075  |
| M <sub>DC2</sub>   | (k) 28.5                  |           | 50.1   |
| DW                 | (k) 0.367                 |           | 0.367  |
| M <sub>DW</sub>    | (k) 139.3                 |           | 244.5  |
| M <sub>LL+IM</sub> | (k) 968.2                 |           | 978.3  |

|                    | Abut.     | Pier  |
|--------------------|-----------|-------|
| R <sub>DC1</sub>   | (k) 45.6  | 91.2  |
| R <sub>DC2</sub>   | (k) 2.1   | 6.9   |
| R <sub>DW</sub>    | (k) 10.1  | 33.5  |
| R <sub>LL+IM</sub> | (k) 61.3  | 113.6 |
| R <sub>Total</sub> | (k) 119.1 | 245.2 |

\* The total R<sub>DC2</sub>, R<sub>DW</sub>, R<sub>LL+IM</sub>, and impact reactions are assumed to be distributed evenly to each bearing line at a pier regardless of the span ratios. The bearing design at a pier is based on the maximum reactions of either span.

- $I$ : Non-composite moment of inertia of beam section (in<sup>4</sup>).
- $I'$ : Composite moment of inertia of beam section (in<sup>4</sup>).
- $S_b$ : Non-composite section modulus for the bottom fiber of the prestressed beam (in<sup>3</sup>).
- $S_b'$ : Composite section modulus for the bottom fiber of the prestressed beam (in<sup>3</sup>).
- $S_t$ : Non-composite section modulus for the top fiber of the prestressed beam (in<sup>3</sup>).
- $S_t'$ : 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>LL+IM</sub>: Un-factored live load moment plus dynamic load allowance (impact) (kip-ft.).

**FRAMING PLAN  
STRUCTURE NO. 056-3178**

|          |     |
|----------|-----|
| DESIGNED | BLB |
| CHECKED  | AS  |
| DRAWN    | BCD |
| CHECKED  | BLB |

|                           |                |                |                  |               |           |
|---------------------------|----------------|----------------|------------------|---------------|-----------|
| SHEET NO. 15<br>23 SHEETS | F.A.S.<br>RTE. | SECTION        | COUNTY           | TOTAL SHEETS  | SHEET NO. |
|                           | 0034           | 06-00320-02-BR | MCHENRY          | 65            | 40        |
| CONTRACT NO. 63536        |                |                |                  |               |           |
| JOB NO. C-91-140-11       |                | ILLINOIS       | FED. AID PROJECT | BRS-0034(107) |           |

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