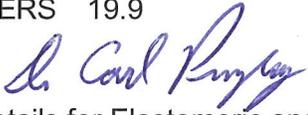




# Illinois Department of Transportation

## Memorandum

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To: ALL BRIDGE DESIGNERS 19.9  
From: D. Carl Puzey   
Subject: Revised PPC Beam Details for Elastomeric and Fixed Bearings  
Date: September 9, 2019

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The bottom splitting plate design details for PPC IL-Beams with bearings have been updated for better detailing and fabrication. The #3 bars will be separated into two groups: single #3 bars and double #3 bars. The double #3 bar allows for proper placement of the beam shear reinforcement. Accordingly, Figures 1 and 2 shall replace Figure 29 of ALL BRIDGE DESIGNERS (ABD) Memorandum 15.2.

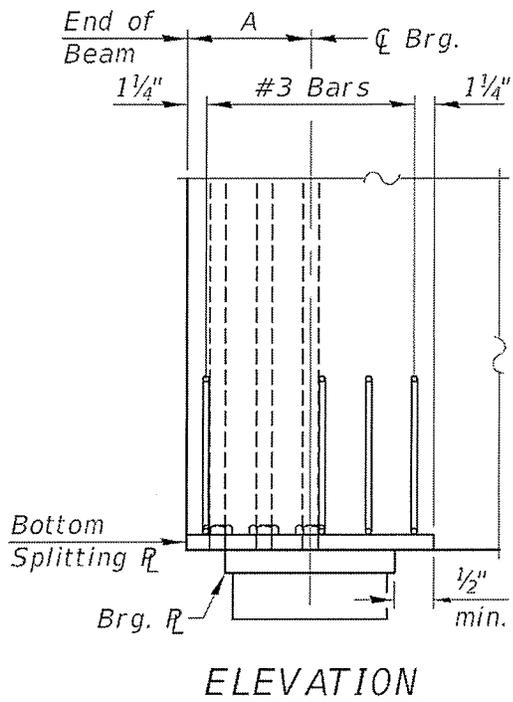
Figure 3 details the bottom splitting plate design details for I-Beams and Bulb T-Beams with bearings. This figure was updated with consistent terminology and shall replace Figure 3.4.8-1 of the Bridge Manual.

The fixed bearing details for PPC beams have been updated. Fixed bearings on PPC beams have been difficult to connect to the embedded bottom splitting plate with an overhead weld. Also, the heat generated from this significant weld has caused the plate to expand and crack the beam. Figure 4 illustrates the addition of another plate with a bolted connection which eliminates the problems associated with the welds. Please see base sheet PI-2FB dated 6-15-2019 for the complete set of details.

These details shall be implemented immediately, as practical, on applicable projects. Please direct questions to Mark Shaffer in the Policies, Standards and Final Plan Control Unit at (217) 785-2914 or [mark.shaffer@illinois.gov](mailto:mark.shaffer@illinois.gov).

Attachments

KLR/kktABD19.9-20190909



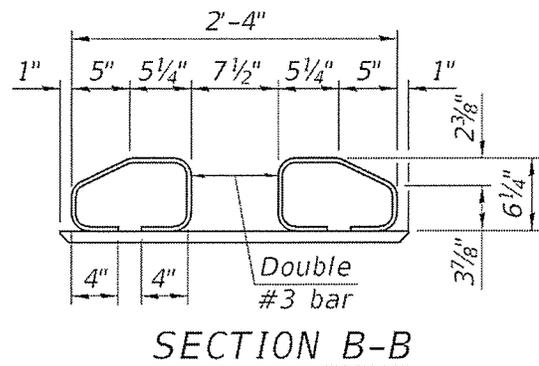
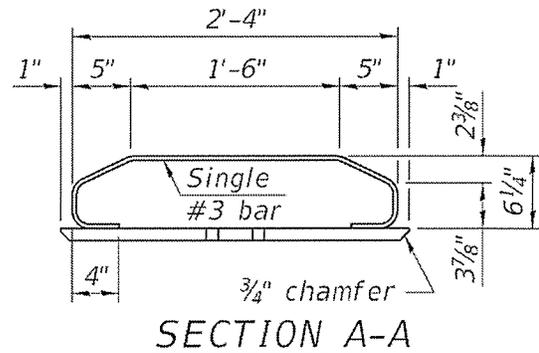
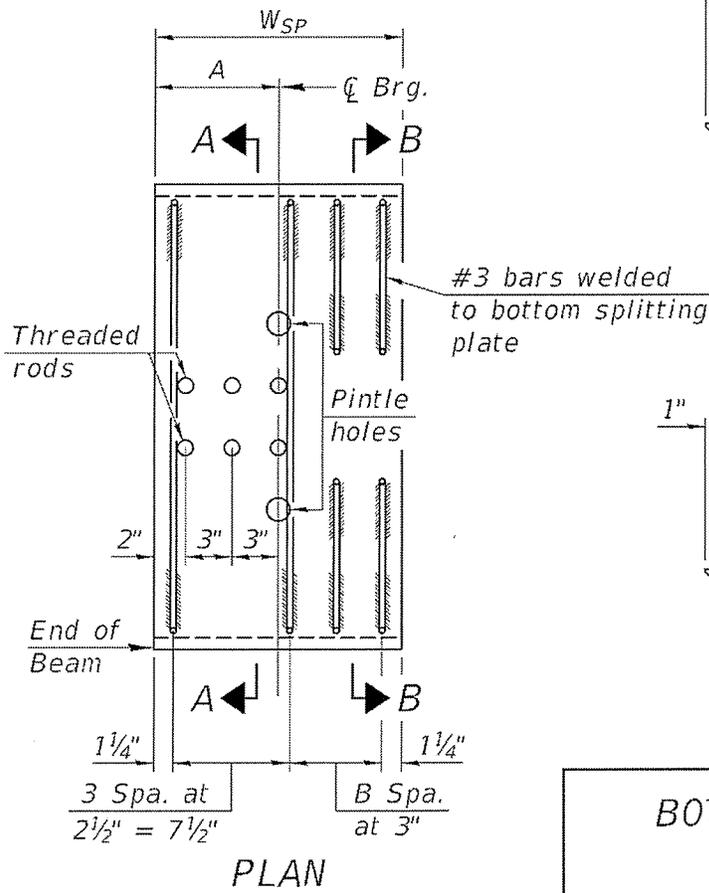
Note:

The IL-Beam base sheets are detailed with the minimum bottom splitting plate width equal to 10". When elastomeric or fixed bearings are required, the plate width will need to be increased as shown. The formulas are based on adding width in 3" increments. One set of double #3 bars are also added for each 3" increment.

$$A = \frac{\text{Top Brg. } R \text{ width}}{2} \text{ or } 8" \\ \text{whichever is greater.}$$

$$B = \left[ \frac{\text{Top Brg. } R \text{ width}}{2} + A - 9\frac{1}{2}" \right] / 3 \\ \text{rounded up to nearest integer.}$$

$$W_{SP} = \text{Width of bottom splitting plate} = B \times 3" + 10"$$



**BOTTOM SPLITTING PLATE  
DETAILS FOR IL-27  
BEAM SHAPES WITH BEARINGS**

Figure 1

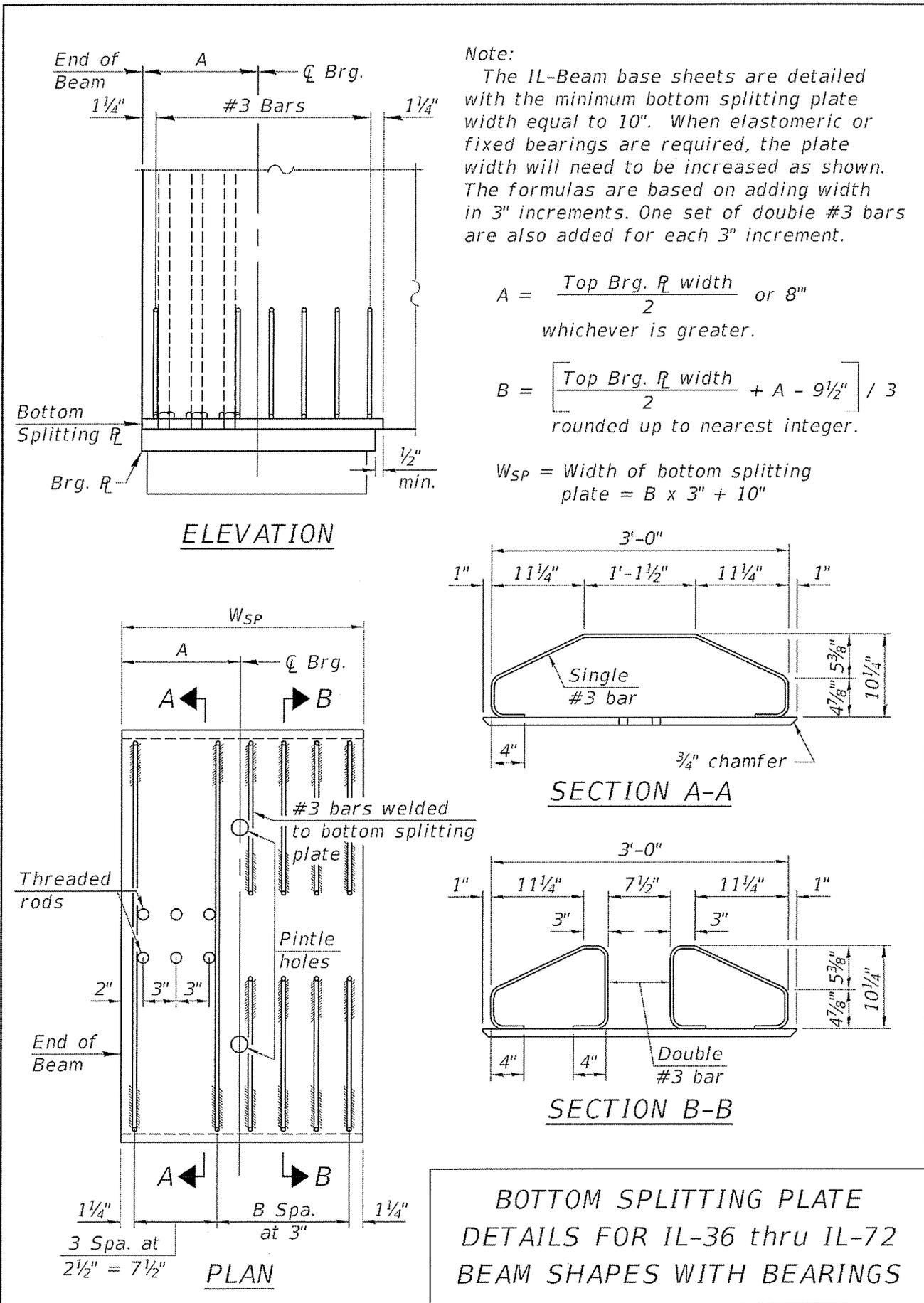
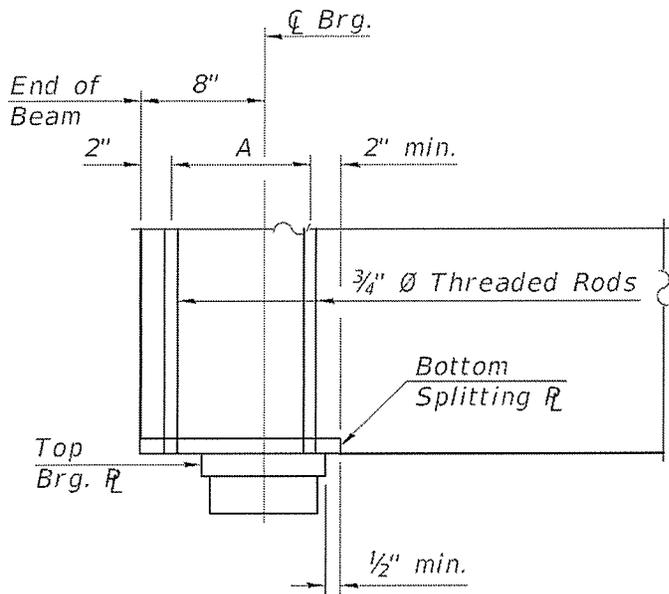


Figure 2



$A = 3 \text{ spaces @ } 3" \text{ for PPC I-beams}$

$A = 4 \text{ spaces @ } 3\frac{1}{4}" \text{ for PPC Bulb T-beams}$

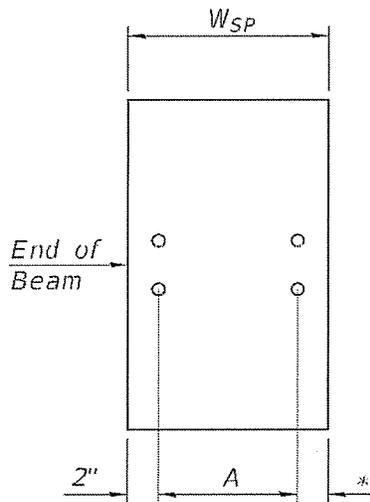
$W_{SP} = \text{Width of bottom splitting plate} = 8" + \frac{1}{2} (\text{top brg. plate width}) + \frac{1}{2}"$

( $W_{SP} = 13" \text{ min. I-beams}$ )

( $W_{SP} = 17" \text{ min. Bulb T-beams}$ )

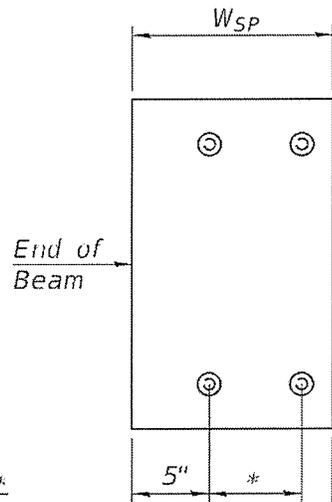
**ELEVATION**

(Studs and pintles not shown for clarity)



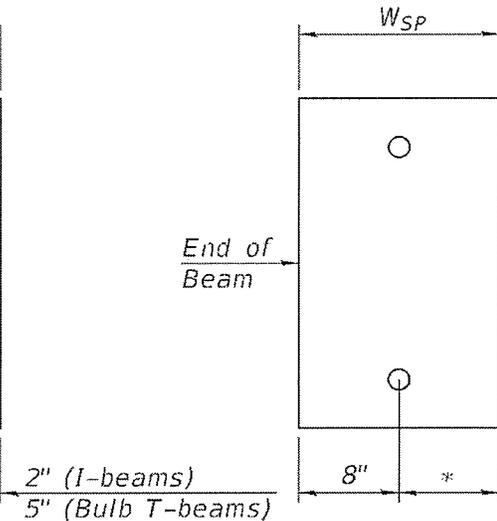
**PLAN**

(Showing threaded rods)



**PLAN**

(Showing studs)



**PLAN**

(Showing pintles used for bearings only)

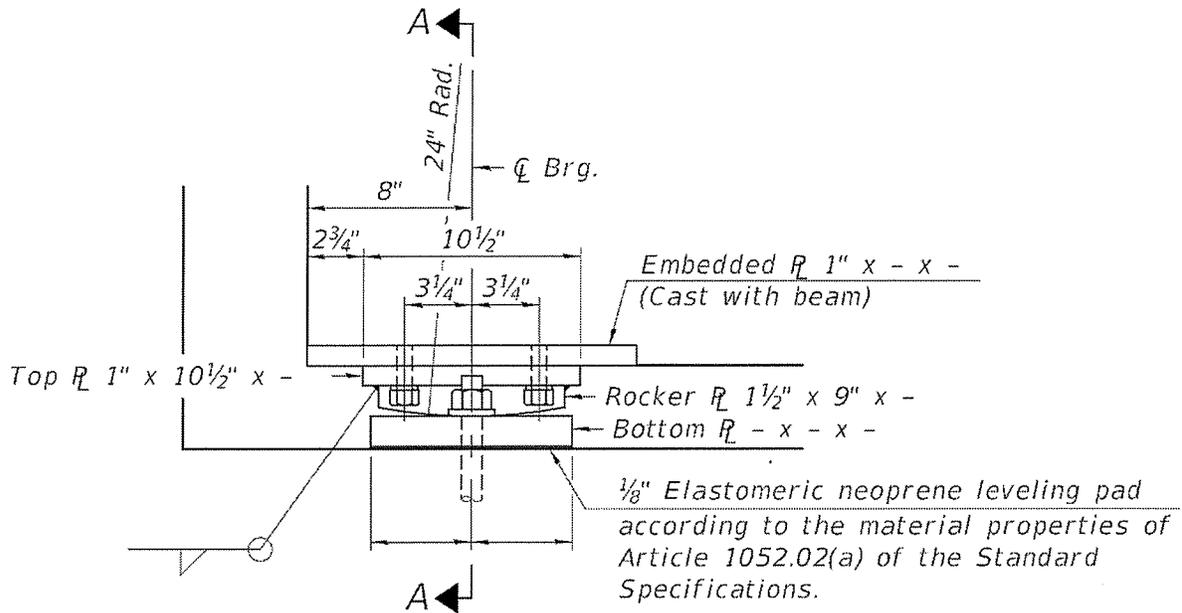
\* Varies based on total width of bottom splitting plate ( $W_{SP}$ ).

Note:

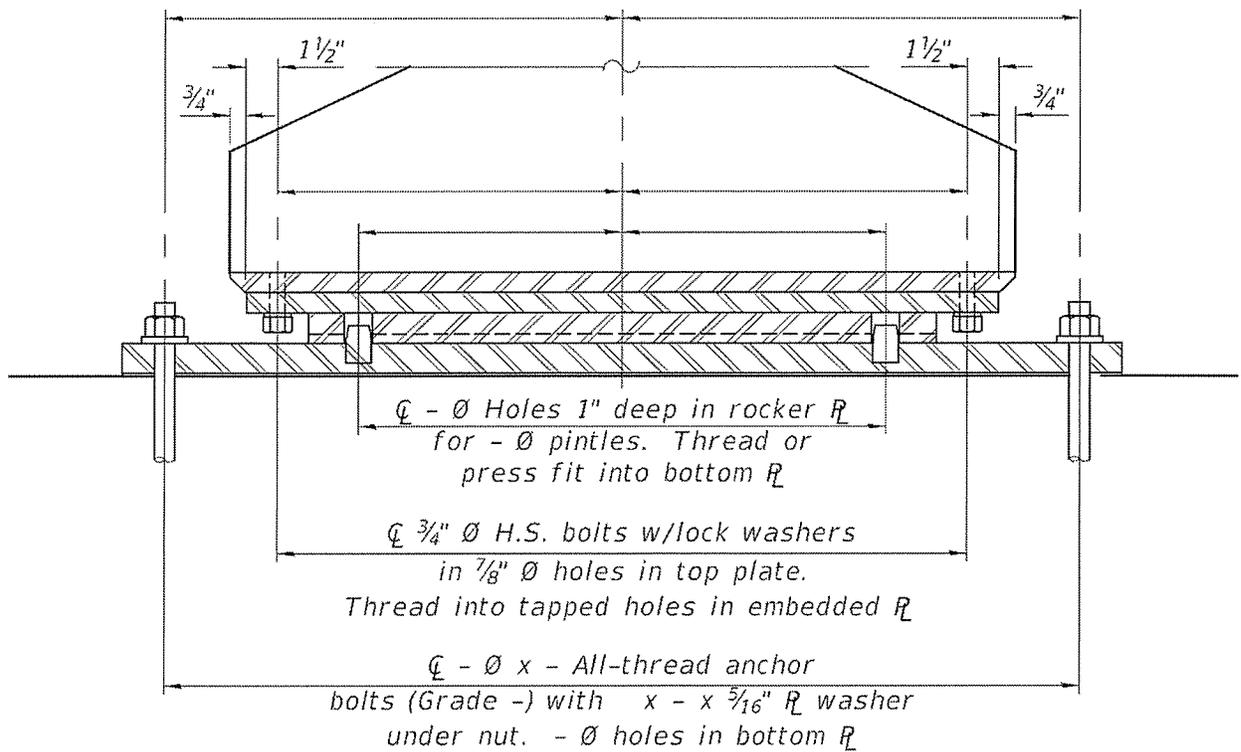
Calculate  $W_{SP}$  (width of bottom splitting plate) using the equation above.

**BOTTOM SPLITTING PLATE FOR I-BEAMS AND BULB T-BEAMS WITH BEARINGS**

Figure 3



ELEVATION AT ABUTMENT



SECTION A-A

FIXED BEARING DETAILS  
FOR PPC BEAMS

Figure 4