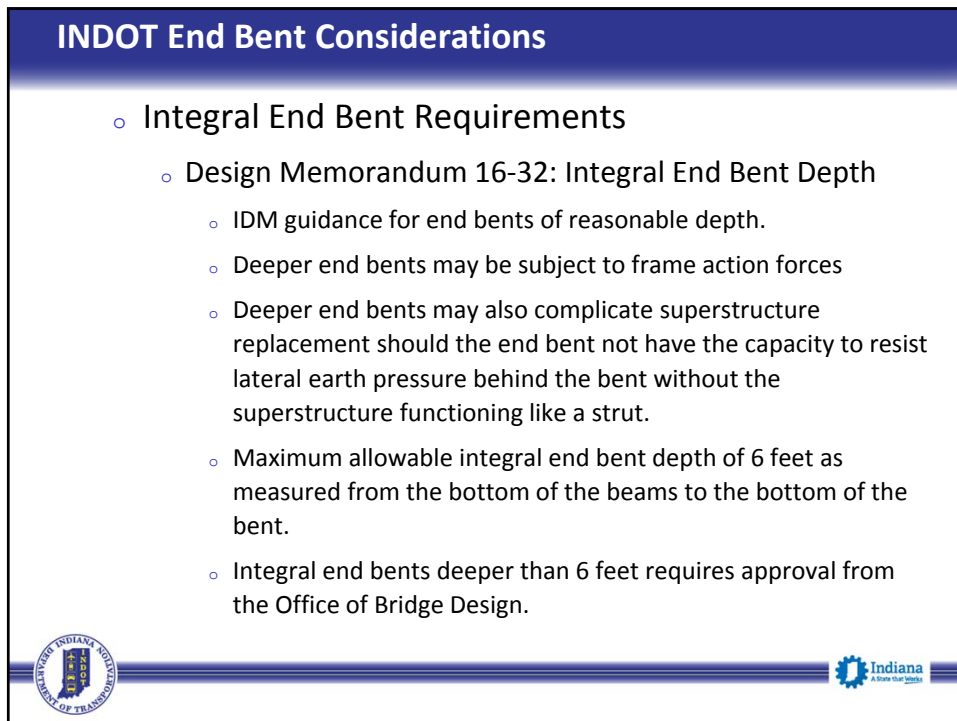






**INDOT Bridge
End Bent Considerations**

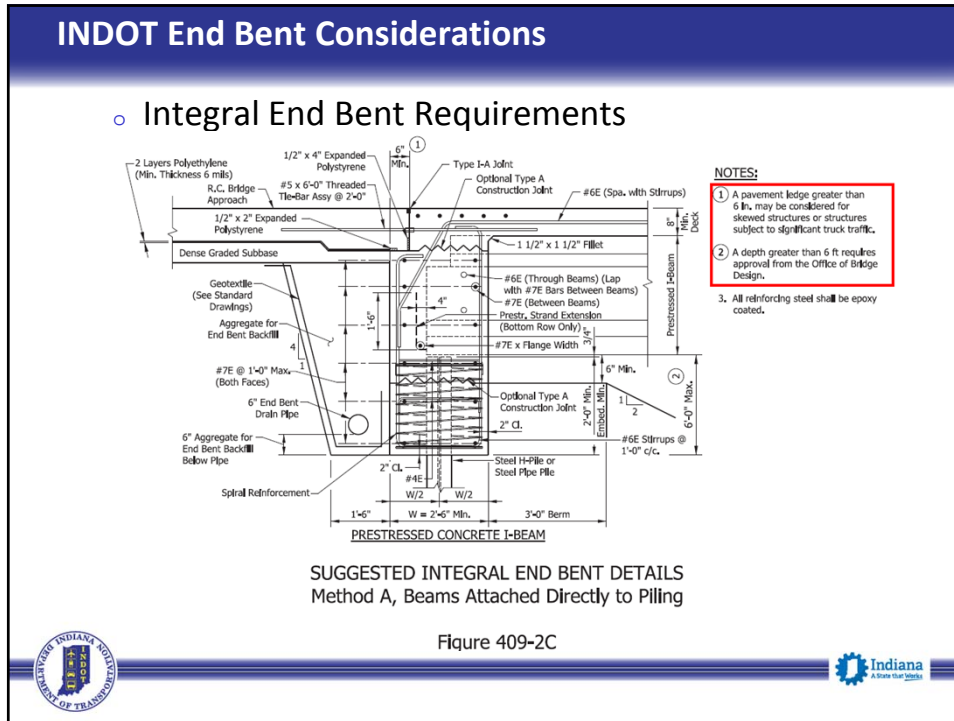
Jeremy Hunter, P.E.
Bridge Design and Load Rating Manager, INDOT
February 16th, 2017



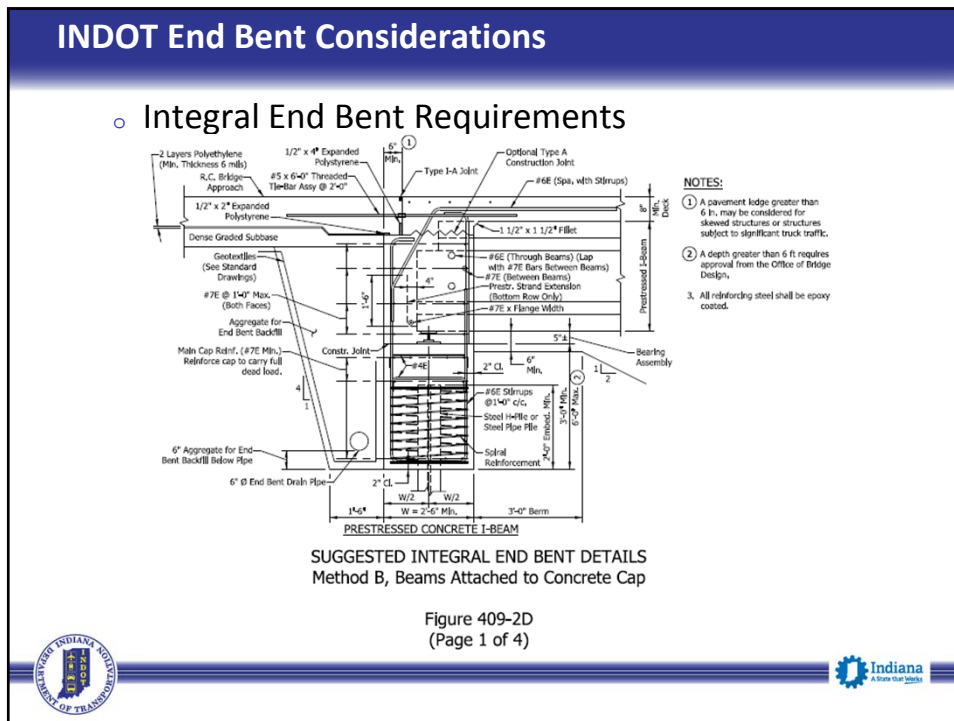
INDOT End Bent Considerations

- o Integral End Bent Requirements
 - o Design Memorandum 16-32: Integral End Bent Depth
 - o IDM guidance for end bents of reasonable depth.
 - o Deeper end bents may be subject to frame action forces
 - o Deeper end bents may also complicate superstructure replacement should the end bent not have the capacity to resist lateral earth pressure behind the bent without the superstructure functioning like a strut.
 - o Maximum allowable integral end bent depth of 6 feet as measured from the bottom of the beams to the bottom of the bent.
 - o Integral end bents deeper than 6 feet requires approval from the Office of Bridge Design.





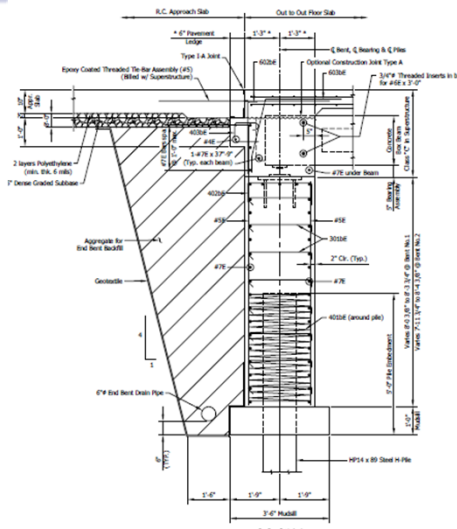
- NOTES:**
- 1 A pavement ledge greater than 6 in. may be considered for skewed structures or structures subject to significant truck traffic.
 - 2 A depth greater than 6 ft requires approval from the Office of Bridge Design.
 3. All reinforcing steel shall be epoxy coated.



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INDOT End Bent Considerations

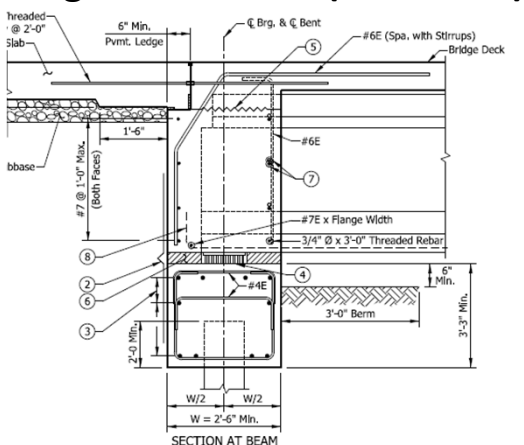
- **Integral End Bents**
 - Example (10' height)
 - Potentially viable solution
 - No superstructure replacement
 - Requires Life-Cycle Analysis
 - Frame Analysis
 - Detailed Pile Analysis



SECTION A-A
Scale: 3/4" = 1'-0"

INDOT End Bent Considerations

- **Semi-Integral End Bents (Method 2)**



SECTION AT BEAM

SUGGESTED SEMI-INTEGRAL END BENT DETAILS
(Method 2)

INDOT End Bent Considerations

- **Semi-Integral End Bents (Method 1)**
 - IDM Figure 409-3A: EPS for Translation/Rotation

The image contains two technical drawings of a semi-integral end bent. The left drawing is a cross-section showing a concrete structure with a #6E reinforcement bar, a 3' x 8' keyway, a 3'-0" berm, and a 2'-0" minimum depth. The right drawing is a plan view showing a 10'-0" width, a 2" centerline (typ.), and a 3'-0" distance between centerlines. Both drawings have red boxes highlighting specific details.

Indiana Department of Transportation logo and "Indiana A Smart Way to Live" logo are visible at the bottom of the slide.

INDOT End Bent Considerations

- **Rocker Bearing Replacement**
 - For projects with rocker bearings under expansion joints, assume the rockers will need to be replaced.
 - Multiple Retrofit solutions are available
- **Elastomeric Retrofit Considerations**
 - Remember that there is horizontal load transfer from superstructure to substructure through elastomeric bearings

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