Geotechnical Aspects of IEBs

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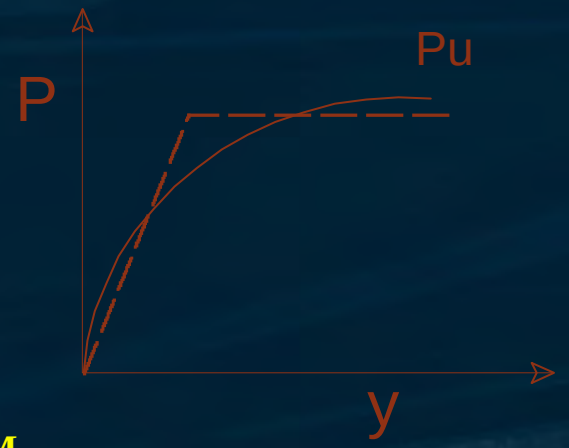
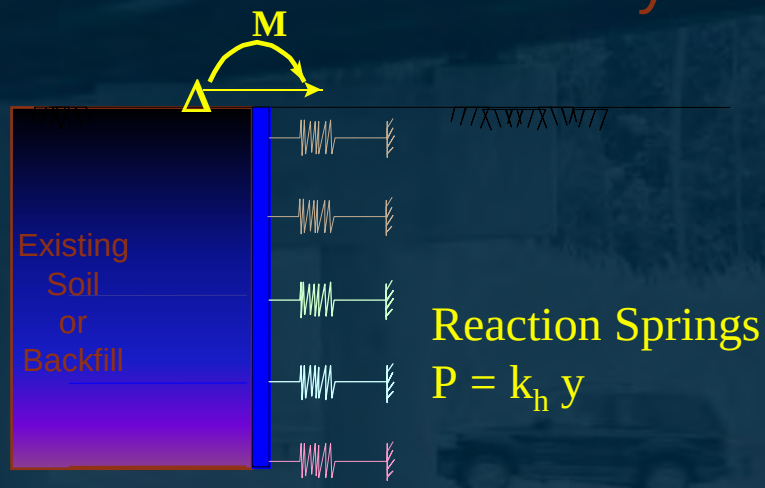
- Lateral Analysis Required (Soil-Pile Interaction)
- Simplified Approach
- Model Input - LPILE
- Allowable Movement and Moments Required
- Moment and Shear vs. Depth Provided
- Iterations and Interaction
- Rigorous Approach
- Model Input – FB Multipier
- P-y Curves

Geotechnical Aspects of IEBs

The Concept of P-y Analysis

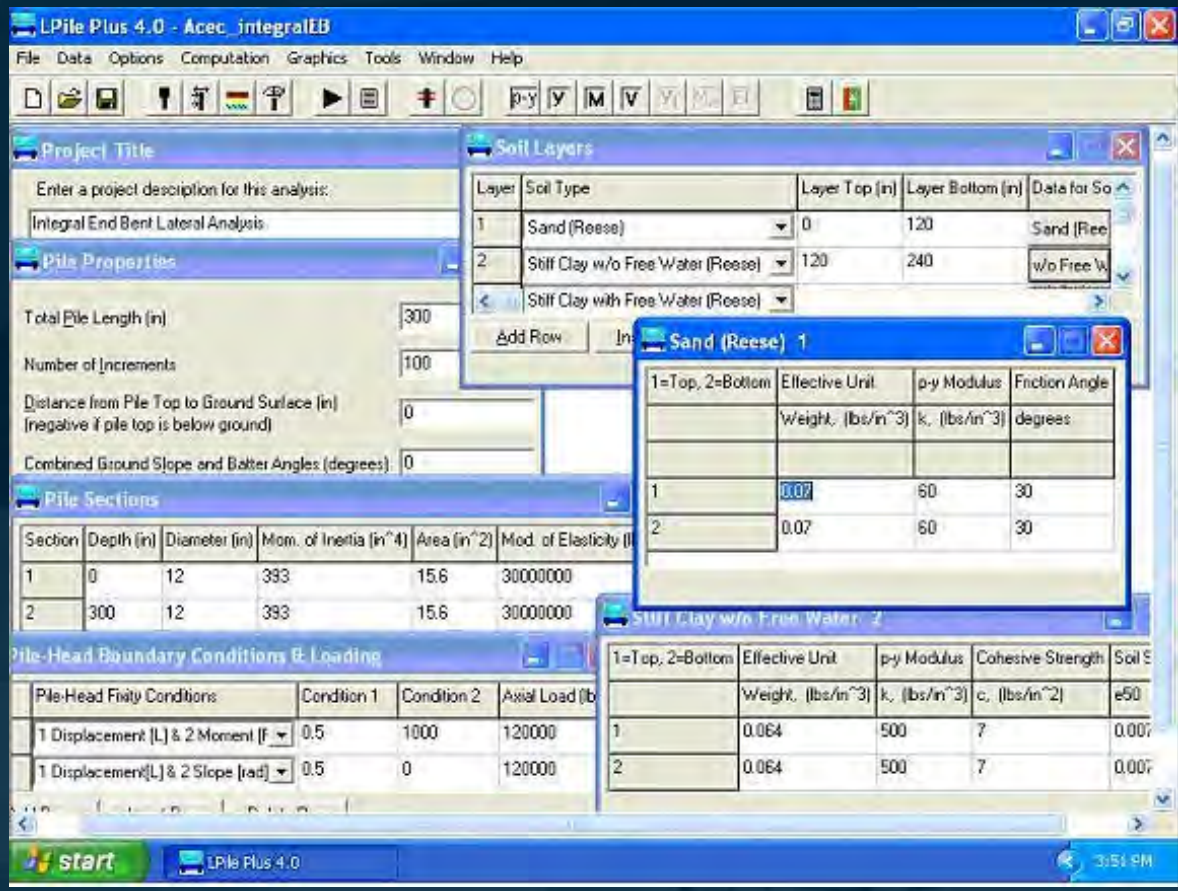
- Discrete Springs
- Soil-Layering
- Soil Non-linearity
- Soil Geometry
- Shaft Non-linearity
- Relatively Simple





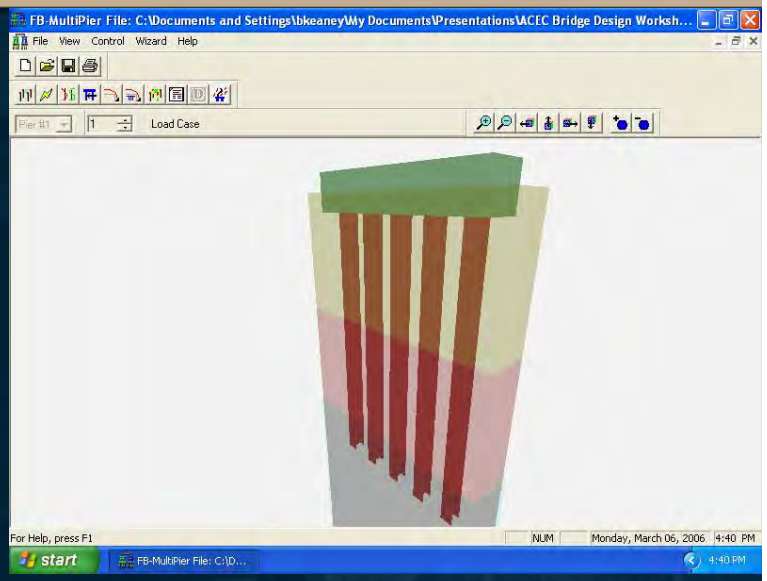
Geotechnical Aspects of IEBs

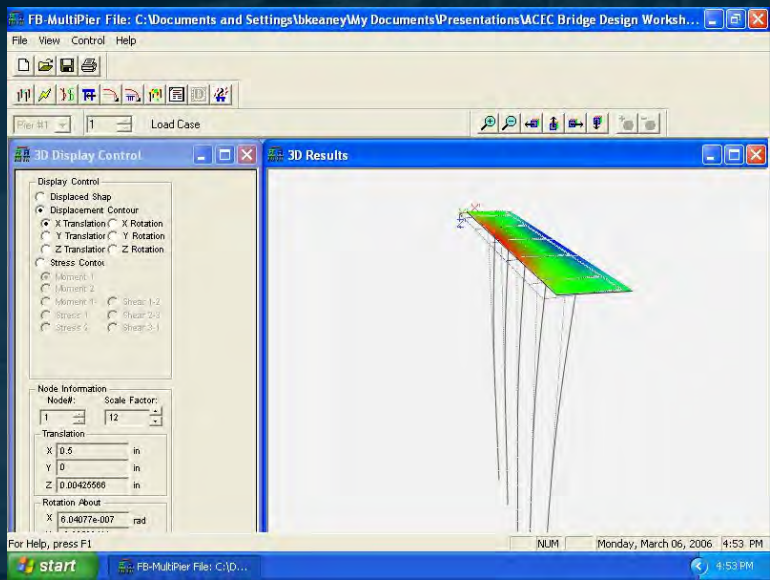
- LPILE Analysis
- Simple Inputs
- Quick
- Linear or Non-linear



Geotechnical Aspects of IEBs

- FB Multipier Analysis
- Very Detailed
- More Interaction
- Longer





NCDOT Policy

NCDOT Policy

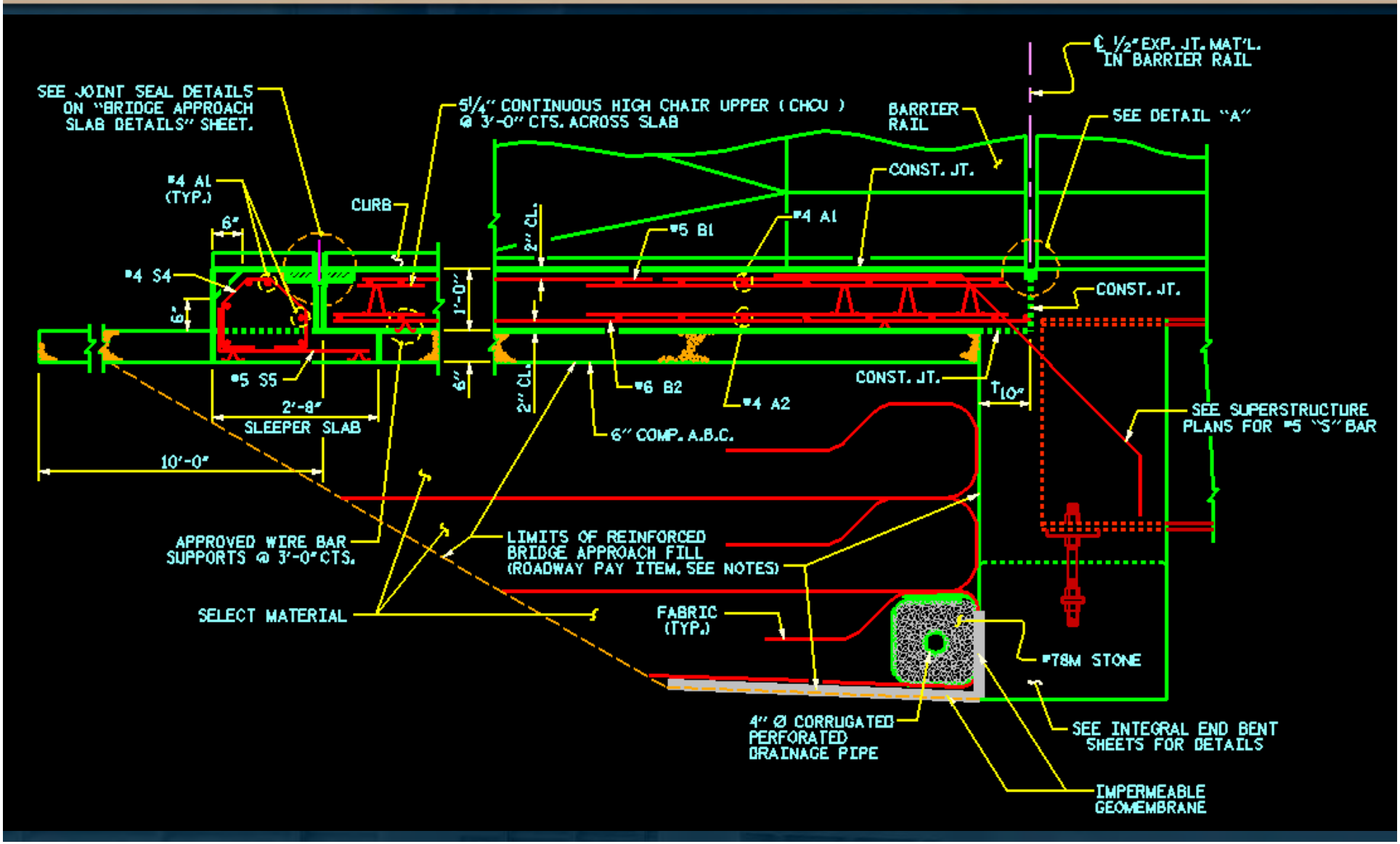
Draft Policy includes:

- Skew Limits
  - $70^{o} \leq$ skew $\leq 110^{o}$
- Total Bridge Length Limits
  - 300ft. (91.44m) - steel
  - 400ft. (121.92m) - concrete
- Single Row of Vertical Piles
  - Oriented for bending about the strong axis

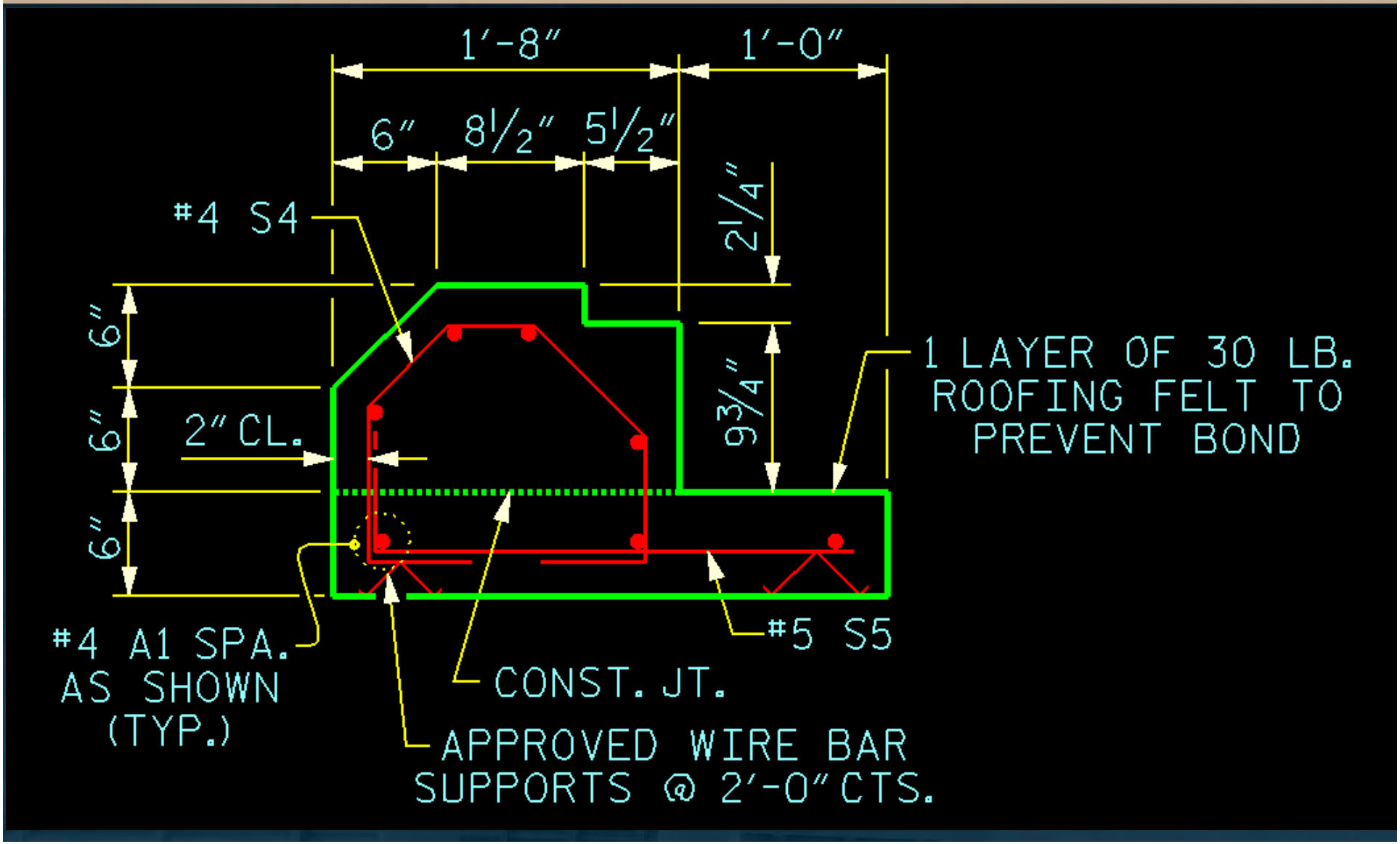
NCDOT Policy

- Wing Walls
  - No brace piles
  - May be tapered to reduce resistance to longitudinal bridge movements
- Tangent Alignment

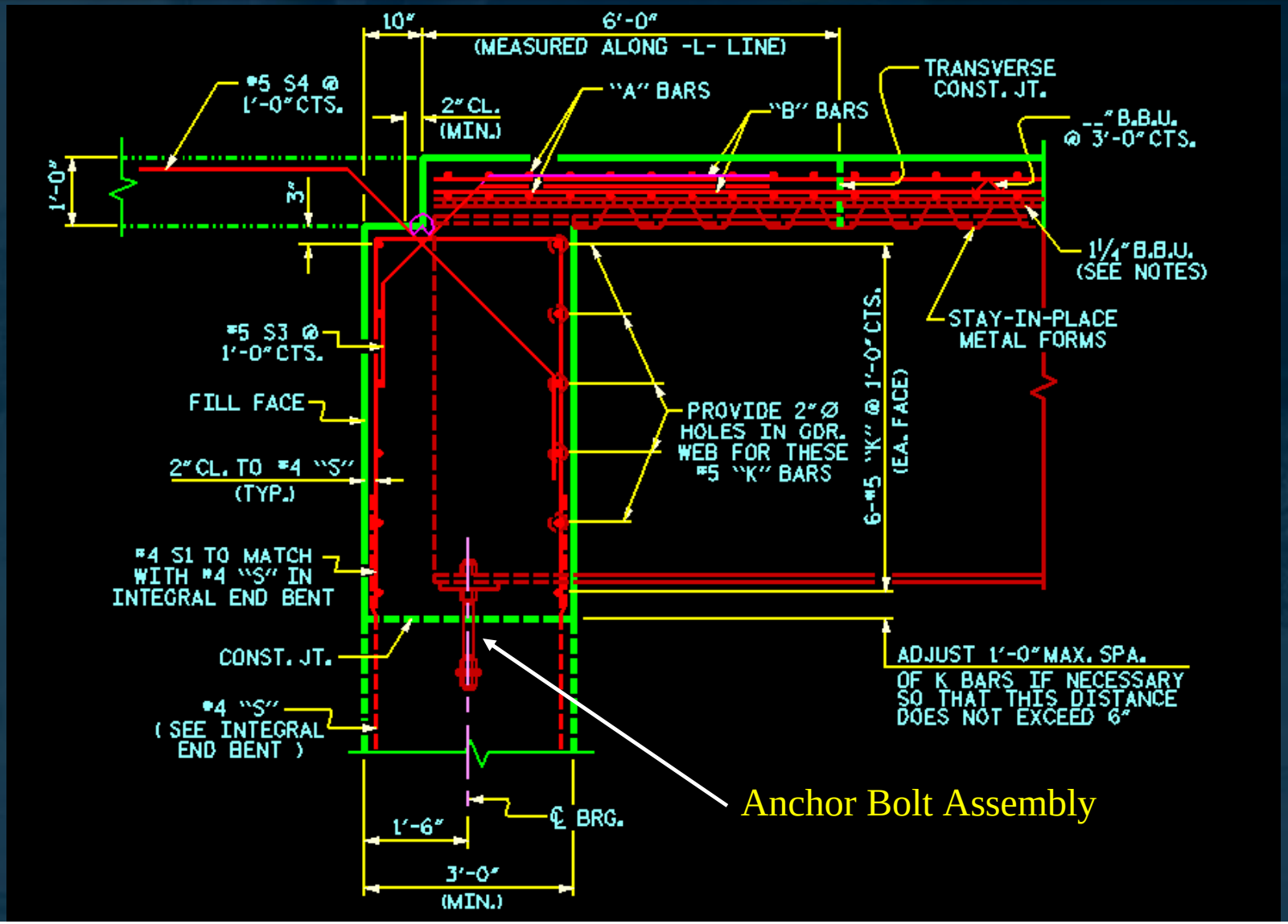
NCDOT Policy – Approach Slab



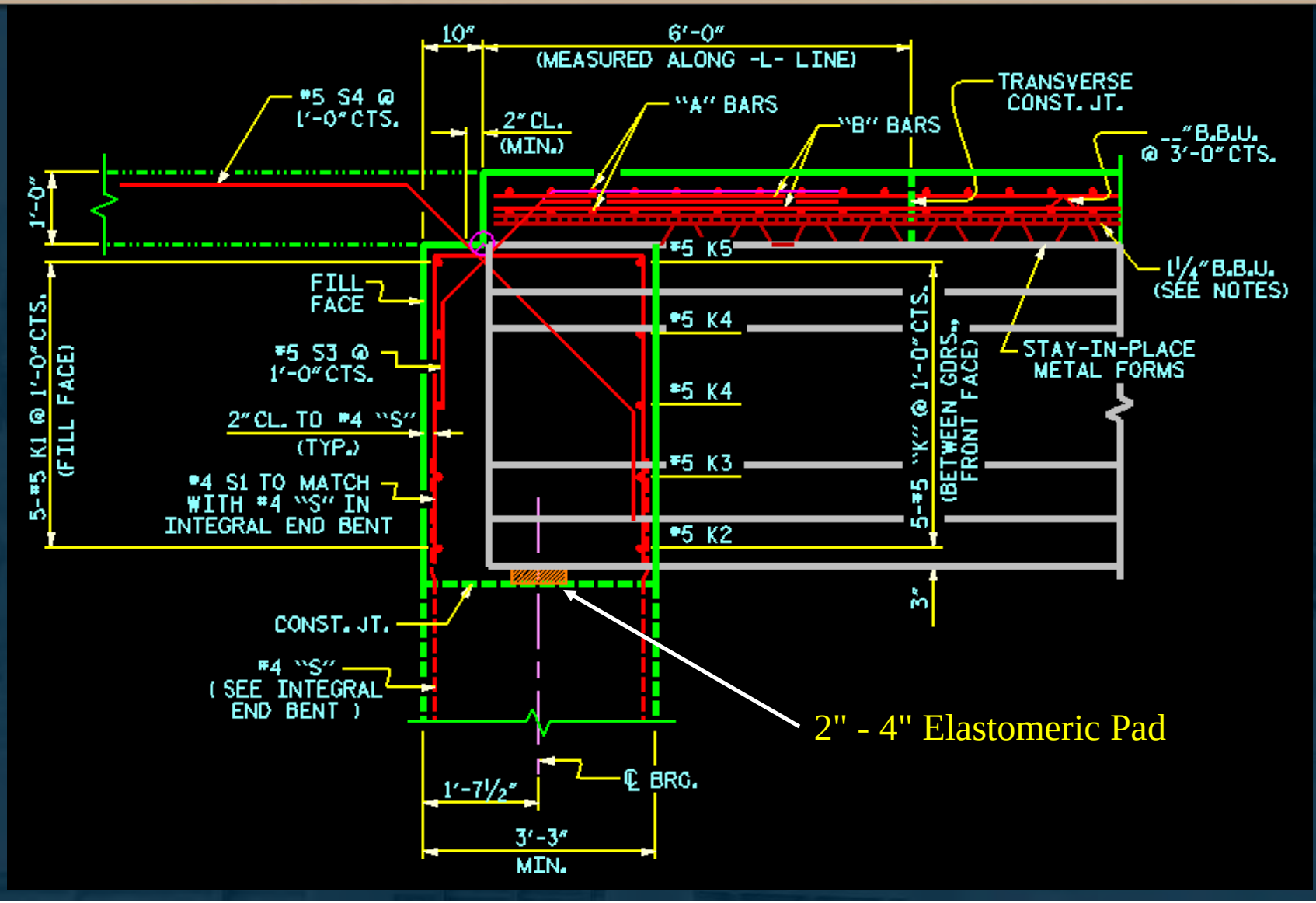
NCDOT Policy – Sleeper Slab



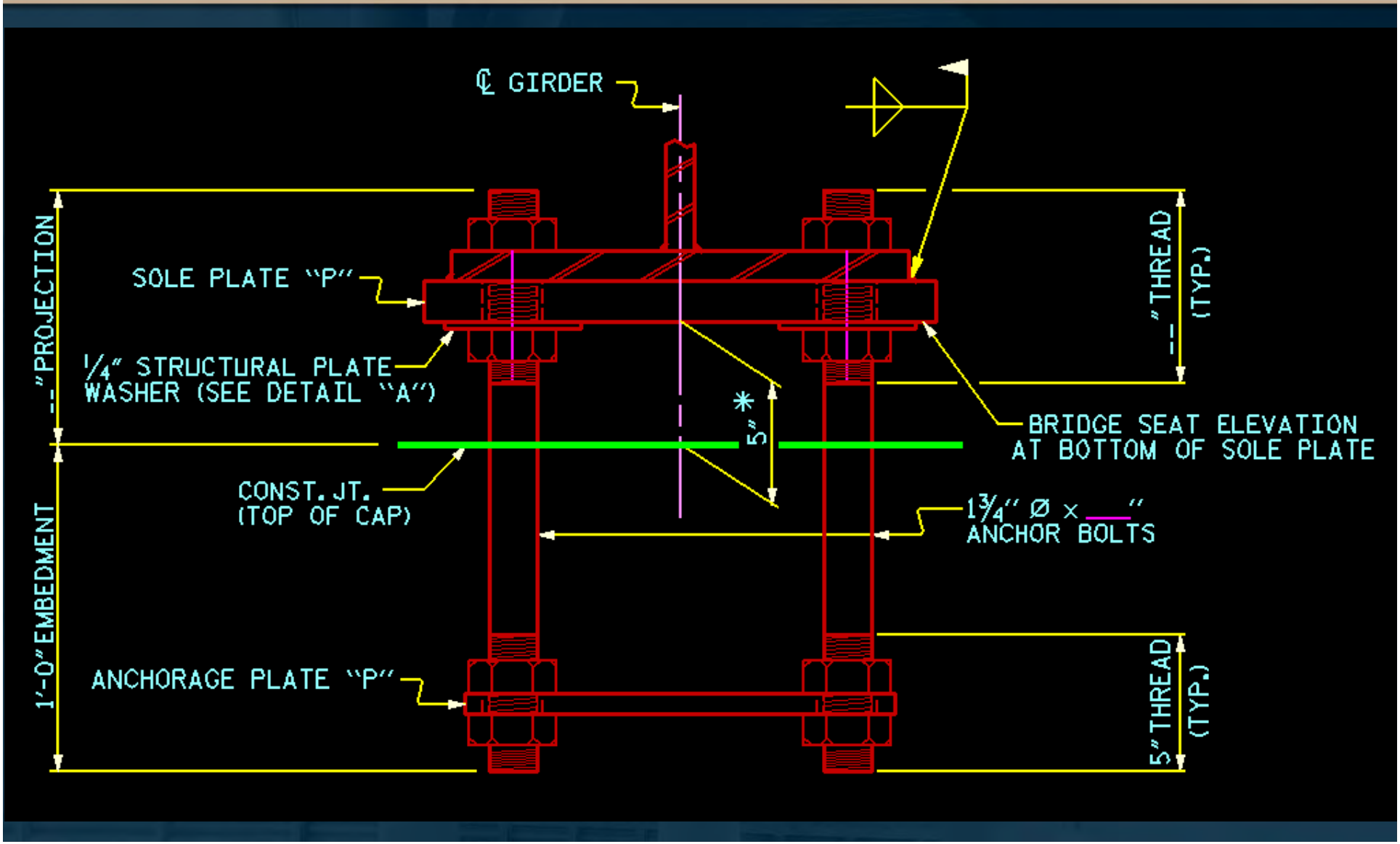
NCDOT Policy – End Bent Steel



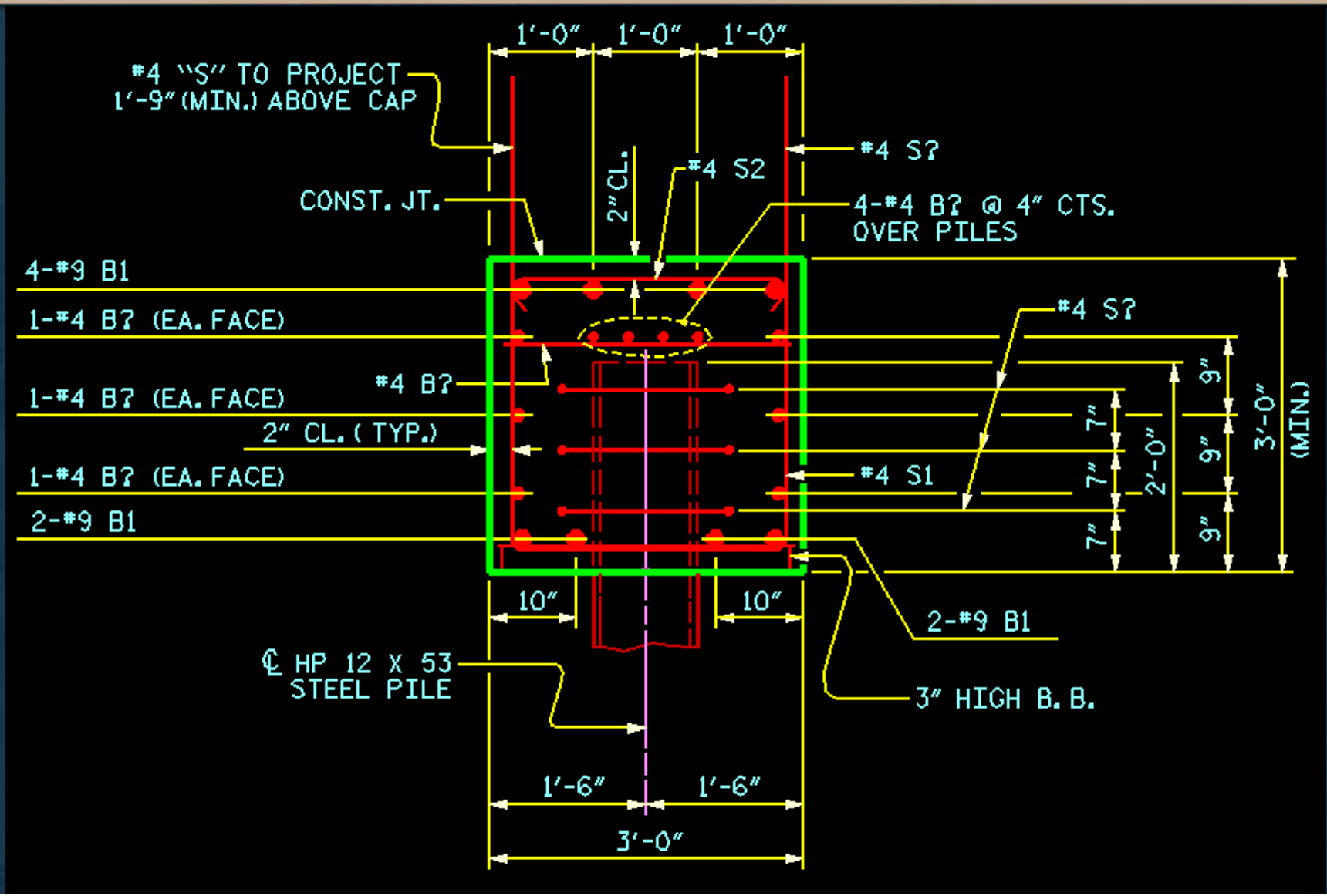
NCDOT Policy – End Bent Concrete



NCDOT Policy – Anchor Bolt Assembly Steel



NCDOT Policy – End Bent Cap



Conclusion

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- Thanks to the speakers
- Plans for future workshops
- Q&A time