DESIGNERS MEETING

Minutes for April 30, 2025 1:00 PM – 2:00 PM

Erin Brewer, Secretary

TOPICS

- **Topic 1: Updates on Special Provisions 107**
- **Topic 2: 2025 NASCC Steel Conference**

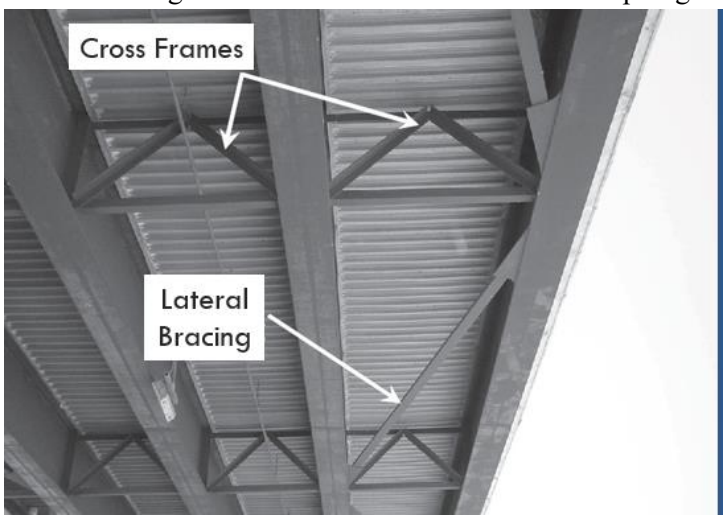
Topic 1: Updates on Special Provisions 107

- New 107 Special Provision Templates are now in the Recurring Special Provisions folder
- These templates are Bridge Specific, not necessarily the same as Highway or Multimodal
- Interstate work is not covered by the templates
- Updated TAMEing guiding is also coming
    - Could it be based on design hourly volume?

Topic 1: 2025 NASCC Steel Conference

<u>Constructability Design Requirements</u>

- New cross frame bracing requirement in AASHTO LRFD 10th edition Section 6.7.4.2.2
    - Lateral bracing does not refer to the cross frames/diaphragms



    - This is a global stability check instead of LTB
- LRFD 10th Edition tension flange check in flowchart may be incorrect
- Widen compression flange to meet stiffness requirement
- Usually no stability bracing needed under 200 ft, always use for 300 ft or larger bridges
- Modeled lateral bracing as a spring at the top of a column
- Top flange lateral bracing at the end of spans for continuous girders

Line Girder Analysis Research

- Performed to understand the limitations of line girder analysis limitations
- Research showed that line girder analysis worked for:
    - 30-60 degree skew
    - Girders: 4-8 girders
    - Span lengths: 150 ft -250 ft

Fun With Fracture

- Presentation justified that steel twin tub girders were redundant
- Presented by Texas DOT

Steel Material Characteristics

- Recommended to use HPS 70 steel
- Higher strength material, less material needed for job, which saves waste
- Domestic mills
    - 70% creates new steel from waste steel
    - 30% creates steel from raw material

Coatings for Corrosion Protection

- Maryland typically uses weathering steel, lets it oxidize, then paint it
- Organic zinc dried faster but did worse in UV exposure
- Metallizing isn't applied to the top flange of the girder to allow for the application of shear studs
- Duplex coating is metalizing with an epoxy sealant
- We typically either use weathering steel or metalized steel

Case Study's

- Moveable Bridge Rehab - Connecticut
    - 1913 East Haddam Swing Truss Bridge over the Commecticut River
    - There is a swinging and stationary section
    - Swing bridge
        - Rotates about a central bearing controlled by an electrical motor/gear boc
        - Wedges are inserted at bridge ends to transfer external loads
- Kentucky Transportation Cabinet – Russel Fork Bridge
    - Curved bridge to avoid coal mines
    - Girders were kept straight but they kinked the splice plates
    - Used HPS70 steel in high stress areas
    - Made a temporary solder pile wall with shipping containers
- Blue Mesa Bridge
    - Designed with T-1 steel, there have been girder defects with T-1 steel so they did a full in-depth analysis on this bridge and found many cracks
    - They ended up rehabilitating the bridge in a few months
- Salmon Creek Bridge
    - Grasshopper style bridge

    - Legs and main girders worked together like an arch
    - Had challenging construction engineering problems
    - Used liquid nitrogen to thermally control mass concrete placements
- Three Sisters – Pittsburg
    - Self-anchoring at the abutments
- Frederick Douglass Bridge – Washington DC
    - Made the bridge a monument
    - Three sets of free-standing arches, each arch reaches the height limit set in DC
- John C. Waldron Memorial Bridge
    - Used an aesthetic haunch to better match the previous concrete arched bridge

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End of Minutes