ASCE – INDOT
STRUCTURAL COMMITTEE
MEETING NO. 103 AGENDA

April 16th, 2024

8:30 am, MS Teams and INDOT I-465 Conference Room (7th floor)

1. **Review and approve Meeting 101 and 102 minutes**.
    a. Approved
    b. Need to get previous minutes posted to INDOT's website.
2. **Bridge Design Conference Discussion (Wagner)**
    a. Feedback survey results were presented and discussed. Mostly positive. There were requests that future conferences cover topics on SS&T and more typical designs.
    b. Future presenters should be advised to speak for 40 minutes and leave the last 10 minutes for questions to ensure everyone feels they have enough time to ask them.
3. **Semi-integral bent details (Wagner, McCool, White, Schickel, Borcherding, Merida)**
    a. Multiple design memos will be released
        i. Deletion of integral end bent details with beams attached directly to piles
        ii. Wider pavement ledges
        iii. New diaphragm details
        iv. New RCBA details
        v. Bridge design aid being developed for rehabilitation
        vi. Guidance for retrofits and rehabs (Lunch & Learn)
4. **LRFD vs LFD on Rehabilitation Projects (White, McCool, Eichenauer, Wenning, Arnold)**
    a. White – No updates. Need to develop guidance to designers acknowledging that older structures will likely not satisfy LRFD criteria and then give suggested mitigation measures.

5. **Environmental Bridge Permits formally *Sand Bag Cofferdams* (Wagner, Merida, Hailat, Porter, Lesh)**
    a. Wagner – Wants to create a standard RSP that would be referenced in plans which would provide more details on the causeway materials, elevations, etc. or would refer to the environmental permit application to provide this information. This could then avoid having to include such details in the plans, which would contractually obligate the contractor to construct the causeway as shown on the plans.
    b. Jessop – Agreed with Wagner that generic area should be shown on plans for limits of causeway so that utility coordinators, right-of-way personnel, etc. are aware of the impact area.
6. **PVC Deck Drains on RC Slab Bridges (Shergalis, Wagner, Schickel, Porter, Swiderski)**
    a. Swiderski – Details sent to INDOT Standards Committee. Revisions to Indiana Design Manual (IDM) and standard drawings will be released.
    b. Topic can be removed. Task group is complete.
7. **Staged Deck Pours for Steel Bridges (McCool, White, Merida, Borcherding, Shaw)**
    a. McCool – Met recently. Prestressed concrete beam superstructure deck pour spreadsheet has been released. Steel guidance in development. Much more difficult to develop. Current goal is to develop guidance for 90% of the cases with proper span ratios, typical interstate-type bridges with unbalanced end span ratios, and very long spans.
    b. White – Requested feedback on results of decks that were approved for continuous pours using current INDOT prestressed beam spreadsheet. There has been a bridge in the Greenfield District, which was approved via calculations with the spreadsheet, but its deck cracked over the piers. The INDOT spreadsheet can be revised (or deleted) by INDOT if enough empirical data demonstrates that it should be.

c. McCool & Wenning – Need to revisit longitudinal closure pours for phased construction. Incorporating this would help with differential deflection between phases and would lessen cracking along phase line cold joints.

d. McCool – We need to revisit pouring the RCBA continuously with the bridge deck. His experience is that when this is done, the approach slab will demonstrate widespread cracking at or near the Type IA joint.

e. White – Asked for committee feedback on IA joints on a skewed bridge at the copings relative to the orientation of the cold joint in the bridge railing above. Options of keeping the joint consistent with the skew through the railing limits and up through the railing versus kinking the joint were discussed. Topic will be continued in future meetings.

    i. McCool added this as a topic of new business. New task group members – White, Borcherding, Wenning, & Schickel

8. NEXT Beams (McCool, White, Wenning, Arnold, Wagner, Spaans)

a. McCool - The third INDOT project is currently under construction. A good Road School presentation was given. The current focus needs to be on determining the actual costs for fabrication and construction.

9. ABC Working Group (Schickel, Arnold, Wagner, Hailat, McCool, White, Eichenauer, Cowan)

a. Schickel – No update

10. **Bearing Retrofits / Rehabilitation (Swiderski, Schickel, McCool, White)**

a. Swiderski – Details being developed

11. Open Pile Bent Rehabs (McCool, Eichenauer, White, Schickel, Arnold, Merida)

a. McCool – Meeting scheduled for later this week. Group will begin by collecting historical repair details. Initial goal is to come up with recommended options and tool kit for designers.

b. Wagner – Group should look at cutoff point where replacing piles makes more sense financially.

12. Post-Installed Anchors (Arnold, McCool, Wagner, White, Porter, Swiderski)

a. Arnold - Task group recently met. Swiderski and White will review design calcs from consultant for two separate projects which included railing replacements. INDOT will then provide feedback on methodology and give suggestions for associated design community guidance.

b. A draft USP will be developed for retrofit jobs which may require specific epoxy manufacturers, epoxy structural performance, etc.

   i. Epoxy products need to satisfy ACI 355.4 testing requirements.

   ii. Epoxy products must satisfy “Buy America” requirements.

c. Group will develop Bridge Design Aid for railing retrofits and/or replacements.

13. Reinforcing Cover on Slab Bridges (Schickel, Shergalis, Porter, White)

a. Schickel – No update. Recent design memo finished task group. Item can be removed.

14. IDM Steel Chapter Update (McCool, Schickel, Hailat, Wagner, Shaw)

a. McCool – Meeting scheduled for tomorrow.

15. Bridge Joint Retrofits (White, Hailat, Schickel, Porter)

a. White – Text of a bridge design aid approximately 90% complete. Draft sketches in review.

16. RC Slab IDM Drawings (Wenning, Wagner, Merida, Borcherding, Wagner, White)

a. Wenning – Current IDM figures show berm 6” below bottom of RC Slab. Field experience shows berms are built several feet below bottom of slab. This is due to the style of formwork being used now. The end bent cap would need to be deepened accordingly. The subsequent result is that RC bridges would then need wingwalls and then possibly additional depth below the berm for retained backfill under the approach slabs. Asked if committee was accepting of changing IDM guidance to provide more height. Generally, group was accepting, but additional details and research will be performed by task group to further study impacts of this change.

b. White – Current IDM shows “crank” bars in slab for support of top mat of reinforcement. INDOT may be going away from this practice and reduce plans to only show maximum spacing of support chairs, crank bars, etc. The goal would be to allow contractors to support the top mat with the product they prefer as long as it meets minimum performance specs. This would also keep construction consistent with pier footings and abutment footings where supports for the top mats of reinforcement are now detailed in the plans.

17. Prestress Beam Camber (White, McCool, Hart, Wagner, Hailat, Porter, Spaans)

a. White – After looking at 10 bridges, trend appears to be that actual cambers are less than predicted in plans.
b. McCool – This topic is still being discussed as part of PCI committee.
c. White – Guidance to designers should be proactive to account for additional load caused by actual camber being less than predicted. We could possibly alter the camber deflection multipliers suggested by INDOT.
d. White – Group needs to ensure contracts and details have foresight for additional shims, etc. as necessary to adjust the seats to account for the camber variability.
e. Wenning – Guidance needs to also cover the topic of vertical clearance and the impacts of beams coming out flatter than predicted.

18. Prestress Box Beam Bearings on high skew bridges (White, McCool, Hailat, Porter, Spaans, Wenning)

a. White – No update

19. New Business

a. Approach Slabs and Bridge Railing Details at Type IA Joints (White, Borcherding, Wenning, Schickel)
b. White – Requested “concrete mix designs” be moved to “Parking Lot”. All concurred.

Recurring Business

- Bridge Design Aids Update (Wagner)
- Standards Committee Updates
- Overlay Types (Hunter, White)
- Link Slab Design and Details (Wagner, Wenning, Schickel)
- Research Needs and Innovative Ideas Update (Wagner)
- Concrete mix designs (White, Nelson, Wenning, McCool, Merida)

Bridge Design Conference Topics

- Pannel Discussion “Start to Finish of a Project”

Concrete Mix Designs

- E5 / internally cured concrete
- semi-lightweight
- lightweight
- rapid curing concrete in RCBA (currently a RSP)
- UHPC (nonproprietary)

Research Projects

- Fire Damage on Concrete Bridges
- Seismic Assessment Design and Retrofit
- ABC Guide
- Strut-and-Tie Modeling
  - Pack Rust - Mitigation Strategy Effectiveness
  - Repair and Strengthening of Bridge using FRP
  - A New Approach to Accelerated Fabrication of Steel Bridges: Design, Optimization, and Demonstration
  - Evaluating Reserve Strength of Girder Bridges due to Bridge Rail Load Shedding
  - Pedestrian Bridges -- Development of New Criteria for Design & Construction
  - Seismic Evaluation of Indiana Bridge Network and Current Bridge Database for Asset Management
  - Self Healing Concrete
  - BIM for Bridge and Structures
  - Development of Protocols for Reuse Assessment of Existing Foundations in Bridge Rehabilitation and Replacement Projects
  - Pile Stability Analysis in Soft Soils
  - Legal and Permit Loads Evaluation for Indiana Bridges
  - Use of LRFR Methodology for Load Rating of INDOT Steel Bridges
  - Improved Live Load Lateral Distribution Factors for us in Load Rating of Older Continuous and T-Beam Reinforced Concrete Bridges
  - Shear and Bearing Capacity of Corroded Steel Beam Bridges and Effects on Load Rating
  - Civil Infrastructure Systems Open Knowledge Network (CIS-OKN)
  - Implementation Study: Continuous, Wireless Data Collection and Monitoring of the Sagamore Parkway Bridge

Parking Lot

- Long term deflections in prestressed beams
- Special provision for high strength concrete
- Mild reinforcement in prestressed beams (particularly 401 bars)
- Post Tensioning Specs
- Terminal Joint Details
- Alternate Structure Types
- Continuity of Prestress Concrete Beams (Heidenreich)**(TRB Research)**
- Hydro-demolition (Wagner)
- Fiber Wrap (Jessop)
- High Early Strength Concrete (Nelson)
- Expansion Joints Options (Wagner, White, Eichenauer) **(PP)**
- Load Rating Policy and Procedures (Hunter)
- Approach Slabs (Hailat,)
- Bridge Deck Overhang Design (Wagner, McCool, Hunter, Eichenauer)
- Pile Driving Recommendations
- SIP Forms (Hunter)
- Girder Stability (McCool, Arnold, Porter, Eichenauer, White)
- TS-1 Railing (White, McCool)
- Clear Deck Forms (Schickel)
- Epoxy Anchors (Arnold, Hailat, White, Shaw)
- RC Slab Edge Beam Replacement Details (McCool, White, Shergalis)
- Pile Design for 3-sided structures – Update on potential research project? (White, Schickel, Borcherding, Hunter, Merida)
- STM for End Bents (Arnold, Hailat, Hunter, Schickel, White)

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