ASCE – INDOT
STRUCTURAL COMMITTEE
MEETING NO. 98 AGENDA

December 8th, 2022
9:00 am, MS Teams and INDOT I-70 Conference Room

1. **Review and approve Meeting 97 minutes.**

   Approved

2. **Bridge Design Conference – Update? (Wagner)**

   Lesh – Close to having all presenters set. February 21, 2023 is current date for conference. Hybrid format. Wagner – Considering a presentation on lessons learned regarding specific details, issues in the field, etc. Wagner – Would like to present new end bent details. McCool – Could include lessons learned from plan reviews. Wagner – Requested committee to think about and propose rehab projects that could be shared which illustrate good, proactive lessons learned. Lesh – Still working on drilled shafts and asset management presentations.

3. **Semi-integral bent details (Wagner, McCool, White, Schickel, Borcherding, Merida)**

   Wagner – Still working on having updated drawings to present new details. Close to complete. Goal is to send to committee members this month for review. New details will remove candy cane bars, remove keyways, clean up reinforcing details, strongly encourage elastomeric bearing pads, and allow for future jacking of beams to replace bearing pads.

4. **LRFD vs LFD on Rehabilitation Projects (Hunter, McCool, Eichenauer, Wenning, Arnold)**

   McCool – Prestress beams are being analyzed for both LRFD & LFD to document differences in result. Steel beams are being analyzed for cases with LFD designs that barely met code and then they are being analyzed with LRFD to see if they will pass the LRFD code. Eichenauer – Hailat is helping analyze different pier types. Trying to identify specific load case / combination that typically causes failure in LRFD code vs LFD. May recommend performing new soil borings to see if extra bearing capacity can

be provided. Arnold – Guidance being developed for deck scopes (coping replacements, etc.). Guidance will be presented to other task group members for review.

5. **Sand Bag Cofferdams (Hunter, Merida, Hailat, Porter)**

   PASS

6. **PVC Deck Drains on RC Slab Bridges (Shergalis, Wagner, Schickel, Porter, Swiderski)**

   Shergalis – Draft PVC removal and plug detail presented to group for review. Consider modifying detail to show 8" diameter core to remove PVC pipe. McCool – We need to consider embedded reinforcement; PVC pipe was likely tied to rebar before concrete was cast. Wagner – INDOT Construction will be contacted to learn what issues have occurred from previous and current projects with similar detail. Shergalis – For new slab bridges, current direction of task group is heading towards use of Type SQ drains at designed spacing instead of PVC pipes at 6 ft spacing.

7. **Staged Deck Pours and Reinf. Details (McCool, White, Merida, Borcherding, Reilman)**

   McCool – Design aid for deck pour sequences with prestressed concrete beams has been developed. Group will next look to steel beam bridges.

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

   McCool – Presentation given at CEPDS and at IACCS. Concept was well-received at IACCS. Types D & E seemed to generate the most interest. Ongoing coordination with Prestress Services to modify beam details occurring. Presentation will be given at INDOT Design Conference. More information will be given on crack mitigation. Task Group to develop draft guidance for inclusion in a Design Aid, and ultimately in the Indiana Design Manual. Example guidance will be how to design for higher skews and what changes in details would then be required.

9. **Steel / ABC (Arnold, Hailat, McCool, White, Eichenauer, Cowan)**

   Pilot project just went to Letting. Pre-Bid Meeting was held approximately 3 weeks before Letting. Four contractors attended, only one submitted a bid. Construction to begin in Spring 2023. Lessons learned to follow.

10. **Bearing Pad Standards (Swiderski, White, Wenning, McCool, Schickel, Merida)**

    White – Will be working on revising guidance in IDM, but INDOT Standard Drawings should not be affected.

11. **STM for End Bents (Arnold, Hailat, Hunter, Schickel, White)**

    McCool – Move to parking lot

12. **ABC Worksheet (Schickel, Hunter, McCool, Arnold, White, Cowan, Wagner)**

    Schickel – Need to review effort. Wagner – Need to have more outreach to contracting industry to get more buy-in. Need to sell the benefits more, particularly in terms of safety. Perhaps change the branding to “safer bridge construction”. Eichenauer – INDOT needs to include an analysis of user costs when they compare increased construction costs. White – We should consider use of temporary bridges more often to keep motorists and contractors safe. Wagner – We could consider doing more A + B contracts for these projects. McCool – Re-label the task group. Stephanie added to group.

13. **Standard Beam Detail Sheets (Lesh, Wenning, Hart, Wagner, Cowan)**

    Lesh – Standard prestressed beam details sheets being updated, WWR has been added. Using WWR will result in less strands in the bottom flange. Hailat - INDOT prefers use of WWR due to better workmanship and decreased congestion of reinforcement at beam ends. Muellner – Use of WWR will reduce number of allowable draped strands per row. White – If use of WWR will require use of deeper beam, then don’t use WWR. If it doesn’t, then INDOT would prefer use of WWR.

14. Sample Plans Steel Bridges (Wagner, McCool, Lesh, Schickel, Cowan)

Wagner – Working on sample steel beam rehab set of plans. Reaming diagram shown in IDM requires too much information for shorter span rolled beams. Might change from 1/10 points to 1/5 points for those projects. Cowan – Agreed. Showing points very close together for rolled beams makes it very difficult to fabricate so that all check points are within tolerance.

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

White – Not much progress. Task group is charged with retrofits of old rocker bearings or replacement of rocker bearings to prepare for future project which will include a semi-integral conversation.

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

McCool – Goal is to come up with repair alternatives for open piles. Need to consider pile access, deterioration at flowline, etc. Schickel – Suggest adding Merida to task group. McCool – Should focus on piles just below cap and then at flowline.

17. New Business

a. Post-Installed anchors discussion

   i. McCool – Multiple projects with replacement of old Aluminum bridge railing now requiring replacement of bridge deck to first interior beam to get current bridge railing criteria to be OK because epoxy dowels will not provide the required capacity if following the ACI code. Task group will be formed. Members – McCool, Wagner, White, Porter, and Arnold. Schickel – We should consider road classification and supported removal of enough deck to provide adequate lap lengths, etc. to satisfy LRFD (and ACI) code for interstate bridges.

b. Crankshaft bar update from INDOT

   i. McCool – Questions from last meeting were can we use them in the pier footings and should we remove them from the plans for the

superstructure in a RC Slab Bridge? Wagner – Feels they should still be in the plans for the RC Slab superstructure. McCool – Footings constructed with form ties, making crankshaft bars not required. Wagner – Hesitant to change current practice for either component. McCool – remove topic for future meetings.

c. PT Bridge Rehabs – Guidance update?
    i. White – Is hydrodemolition appropriate for a deck with post-tensioning? Possibly not because removal of deck, even if partial removal, could change structural capacity of the superstructure. McCool – Suggests that guidance is not developed at this time due to very small amount of Indiana's bridge inventory having post-tensioned. White agreed. Could become future research project and/or design conference topic. [Follow up: HNTB recently designed an overlay on a PT slab, required hand-chipping, and did not allow hydrodemolition. HNTB can share contract details by email, if desired.]
d. Issues with only 1" clearance under bottom rebar, particularly on slab bridges
    i. Schickel – Contractors have requested on some RC slab projects to allow for additional cover under bottom mat of reinforcement to get concrete consolidate under bars. White – There are currently no requirements for spacing of supports (chairs) which could be affecting performance (actual cover) of bottom mat. McCool – We should check to see if providing additional bottom cover will change the maximum rebar spacing for crack control. New task group members – Schickel (lead), Shergalis, & Porter.
e. Research Ideas
    i. Wagner requested possible research ideas from the committee to be submitted for consideration in early 2023.
f. Next meeting
    i. March 21, 2023 at 9:00 am (EST). Wagner will send invitation to group.

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

- NEXT Beam Presentation

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)
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