ASCE – INDOT
STRUCTURAL COMMITTEE
MEETING NO. 102 MINUTES

December 12th, 2023
9:00 am, MS Teams and INDOT I-65 Conference Room (7th floor)

1. **Review and approve Meeting 101 minutes.**
    - **a.** Draft minutes sent to group for review. Updated version will be sent out at a later date for review and approval at next meeting.
2. **Bridge Design Conference (Wagner)**
    - **a.** All speakers set.
    - **b.** Presentations currently being prepared.
    - **c.** Save the date sent for February 27, 2024. Formal invitation forthcoming.
3. **Semi-integral bent details (Wagner, McCool, White, Schickel, Borcherding, Merida)**
    - **a.** Wagner needs to prepare updates to IDM language to then send to group for review. Details are drafted.
    - **b.** McCool has notes on considerations for bridges with high skews, particularly considering the proposed mudwall details.
    - **c.** White believes a detail needs further developed for uplift conditions.
4. **LRFD vs LFD on Rehabilitation Projects (White, McCool, Eichenauer, Wenning, Arnold)**
    - **a.** White – No current update.
    - **b.** Research project ongoing to evaluate existing piling. Recommendations on substructure components may need to be delayed.
5. **Environmental Bridge Permits formally *Sand Bag Cofferdams* (Wagner, Merida, Hailat, Porter, Lesh)**
    - **a.** Wagner – Learned that Final Tracings are being submitted without approved permit details, only cover sheets are being submitted. Including permit application details is required. Doing so will help avoid need from environmental agencies to have environmental details in our contract plans.

b. Wagner – Environmental agencies desire to have details of means and methods for bridge removal scopes. Their concern is with materials entering the stream below. Wagner requested the Structures Committee consider what is the appropriate limit on our applications for details on removal methods to keep from over dictating means and methods to contractors. If anyone is contacted by an environmental agency to provide details for bridge demolition in the permit application, Wagner requested she be brought into the conversation so that INDOT can be informed to better create direction for the general design industry.

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

a. Group working on IDM language revisions.

b. Goal is to eliminate PVC drains on new bridges.

c. Still working on retrofit design aid language and details.

7. Staged Deck Pours for Steel Bridges (McCool, White, Merida, Borcherding, Shaw)

a. McCool – Group is accumulating example projects. Goal is to develop a design aid to provide guidance to design community. Best practices will be presented instead of a spreadsheet as was done for prestressed concrete beam bridges.

b. White suggested designers model construction stresses considering multiple pours as shown in the IDM and also one continuous pour.

c. White commented that numerous requests for pouring RCBA with bridge deck are being submitted. If this goes to Standards Committee, standard drawing will be developed for the option of a continuous pour through location of Type IA Joint.

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

a. Three bridges constructed this summer.

b. Next meeting will occur in January to evaluate feedback from different INDOT districts where projects were built. Guidance will ultimately be provided to design committee.

c. Pricing guidance must be developed for design community.

d. Good contractor feedback on installation process so far.

e. Goal is end of Q2 2024 to have design aid drafted.

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

a. Schickel stated that Notre Dame has research project on ABC projects in Indiana, starting in 2024. Wagner stated that we need to improve our efforts towards communicating our lessons learned with Notre Dame.

b. Schickel suggested group develops a design aid that promotes ABC to the design community as more than just a bridge slide, so that mindset shifts to being open to more options during scoping phase.

c. McCool recommends INDOT Bridge Asset Engineers consider ABC during project scoping.

10. Standard Beam Detail Sheets (Lesh, Wenning, Hart, Wagner, Cowan, Spaans)

a. INDOT internal review of sheets is ongoing. Task group nearly complete.

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

a. Wagner has goal to publish before 2024 Bridge Design Conference.

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

a. Swiderski – details for shim retrofit and bolster details are being drafted and will then be sent for internal review. Goal is to create bridge design aid.

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

a. McCool – task group has not yet started. McCool will set up folder for members to share designs and lessons learned.

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

a. Arnold will set up group meeting for end of February 2024. Goal of group is to develop guidance for aluminum bridge railing replacements referencing TXDOT, etc.

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

a. Pass. No progress. Meeting will be set up in February.

b. There is a general request from construction to increase the clear cover for the bottom mat to more than 1 inch. Suggestion is 2 inches. Group generally accepted proposal but task group to further investigate.

c. White proposed that “crank” bars no longer be detailed on plans and that INDOT spec and plan notes state contractor responsible for supporting bars per their means and methods, similar to pier footings. Cost to be included in other items.

d. White stated INDOT Standards working on more detailed standards for supporting rebar, providing maximum spacing of chairs, etc.

16. Deck Panels (McCool, White, Arnold, Borcherding, Schickel)

a. Committee determined this task group can be delayed to focus on others. It will be moved to parking lot.

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

a. Group will meet in January. No recent progress.

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

a. Recent Bridge Design Update (listserv email sent on November 21, 2023) released which stated Alternate SS detail no longer acceptable, without approval from INDOT Central Office.

b.

19. RC Slab Standard Drawings (Wenning, Wagner, Merida)

a. No recent progress. Meeting will be set up in January 2024.

b. Group will investigate vertical distance from bottom of RC Slab to berms. Contractors need more distance to get support formwork in place.

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

a. White – Widely known phenomenon where actual beam camber does not match predicted. Group to give consideration to always including shim packs in design to account for variability. Fabricators would need to give actual cambers to

designers (Engineer of Record) with sufficient time to adjust seat elevations, etc. to make adjustments.

b. Spaans – most often the actual camber is less than predicted.

c. Plans need to call for shim “pack” and define max thickness of an individual plate within pack.

d. White will look into revised INDOT Spec language regarding payment for shim pack, credits for shims that are not used, and additional shims.

e. Designers should design for an additional fillet load to account for camber variability.

f. Wagner asked if plans should include an empty table for cambers, similar to screeds, to guide contractors to contract the EOR if cambers are out of tolerance. White suggested that this practice instead be included in the Standards Specs.

g. Schickel asked if INDOT Specs could require analysis and alterations be the responsibility of the contractor under “Construction Engineering”. Wenning replied that concern would be too much fillet and dead load on beams that they were not designed to and are incapable of supporting. This issue and the subsequent decisions should stay the responsibility of the Engineer of Record.

21. New Business

a. Prestress Box Beam Bearings on high skew bridges
    i. Issue is obtuse corner bearings may be higher than acute corner pads due to beam camber and large skews.
    ii. Proposed solution is to include shim packs as part of design and contract so Contractor can adjust in field as necessary.
    iii. White to lead new task group on prestressed beam bearings. Other members will be McCool, Hailat, Porter, and Spaans.

b. Next meeting scheduled for March 5, 2024 at 9:00 AM (EST). **Revised to April 16, 2024 at 9:00 AM (EST)**

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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