

**ASCE – INDOT
STRUCTURAL COMMITTEE
MEETING NO. 104 AGENDA**

July 16th, 2024

9:00 am, MS Teams and INDOT I-465 Conference Room (7th floor)

1. Review and approve Meeting 103 minutes.

- a. Wagner – Mike McCool re-elected as Chair. Seth Schickel re-elected as Vice Chair. Stephanie wants website to publish member positions and terms (expiration).
- b. McCool - Mike wants to make Secretary an official position. If interested in Secretary position, send email to McCool.
- c. Meeting 103 minutes – approved.
- d. Lesh – Previous meeting minutes have now been posted to INDOT website up through 2023 meetings.

2. Bridge Design Conference Discussion (Wagner)

- a. Wagner – Asked for volunteers to join planning committee. McCool, White, Wright, Wagner, Schickel, Shergalis, Lesh, and Porter volunteered.
- b. McCool – Proposed one topic to be presentation of example railing retrofit calculations, specifically with post-installed epoxy anchors.
 - i. White – Suggested topic be opened to larger topic of bridge preservation and have Elizabeth Mouser present.
- c. McCool – Proposed a panel that would talk about a project start to finish
- d. Wright – Proposed the new INDOT MOT Council could present on lessons learned after reviewing projects this past year. An understanding of impacts to design timeline to get through Council review of MOT concepts should also be presented.

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

- a. Wagner – Presented draft details at Road School. Goal is to have published before bridge design conference. Details are still being reviewed.

4. LRFD vs LFD on Rehabilitation Projects (White, McCool, Wright, Wenning, Arnold)

- a. White – IDM 412 revisions have been drafted. Goal is to be able to use LRFD and LRFR, knowing that old bridges will not pass all LRFD code checks. Coordination with INDOT will be needed on rehab projects to validate proposed rehab approach. White sent draft language to committee today for review and comment within 1 week.
- b. Wenning – Inquired about rehab projects that do increase loading on substructures.
 - i. White replied that research is ongoing for this scenario to determine existing pile capacity, etc. Ultimately, engineering judgement will be necessary. Blanket mandated design guidance may not be possible to cover all scenarios. Bridge Design Aid will be developed.
- c. Wagner – If a component “fails” in LRFD, coordination with INDOT will be required and scope decision must be documented in STG 1 documents.

5. Environmental Bridge Permits formally *Sand Bag Cofferdams* (Wagner, Merida, Hailat, Porter, Lesh)

- a. Wagner – Task group has not met. However, Wagner has met with INDOT Stormwater staff. They would like to develop a RSP, new pay item(s), and associated standard drawings for temporary crossings and work platforms. Examples: bridge, causeway, and low-level crossing with multiple pipes. INDOT hydraulics, environmental, design, and construction groups are reviewing. Next steps would then be to send to environmental agencies for their review. Then, INDOT would publish for designer reference.
- b. Wright – Requested that contractors be on INDOT’s internal committee. Wagner stated that draft documents will be sent to the Structures Committee for review.
- c. Wagner – Standardizing cofferdams should come after approval of standardized causeways and temporary crossings.

- d. Schickel – Inquired about timeframe. Wagner did not provide timeframe as environmental agency review timeframe is unknown. Porter recommended that these concepts be presented through ACEC-IDNR committee to help with review timeline.

6. Staged Deck Pours for Steel Bridges (McCool, White, Merida, Borcharding, Shaw)

- a. McCool – Reminder that there is a published spreadsheet tool for prestressed beam bridges for this topic. A spreadsheet will not be developed by this task group for steel; there are too many variables from project to project. Goal is for typical bridges to provide guidance to request that bridge be poured continuously from end to end without stopping. On larger or more complex bridges, guidance will be developed to help reduce the number of pours and cold joints. Guidance may also be developed for pouring RCBA's with bridge decks.
- b. Hauser – Investigating results of pouring multiple bridge decks simultaneously with approach slabs. Wenning suggested that there should be an additional check for long span steel bridges. He had a bridge (146th St over US 31) that deflected so much as the first span was poured that the reinforcement in the approach slab lifted out of the concrete until the remainder of the deck was poured and everything leveled out.

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

- a. McCool - Task group met recently. All three test projects have now been completed.
- b. McCool – Group will start putting together Bridge Design Aid and proposed IDM changes. Developed guidance will cover lessons learned, fabrication, construction preferences, design references, and costs.
- c. Wenning – Asked if there are other NEXT bridge projects being designed. McCool stated that his firm has two in progress.

8. ABC Working Group (Schickel, Arnold, Wagner, Hailat, McCool, White, Wright, Cowan)

- a. Schickel – Met with Wagner. Topic will be put in “Parking Lot”. There is a new JTRP on accelerated bridge construction that is starting now. Research project timeline is completion within approximately 1 year’ time. Goal is to help guide the report to INDOT’s needs as researchers interview INDOT. Final research report will then be used to develop Bridge Design Aid.
- b. Schickel – Temporary runarounds used to be utilized more often.
 - i. Wagner - A RSP is being developed for temporary bridges. Hart is also investigating the ability of the temporary bridges to support overweight vehicles.
 - ii. Porter – Significant cost savings can be realized by reducing number of phases and if entire segments of interstate can be worked on at the same time. Redesigning MOT can be very important to the project budget and timeline. Temporary bridges can play a major role in this.

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

- a. Swiderski – Will send markups of details to INDOT CAD staff to get standard drawings developed. Completion timeline will be end of this summer.
- b. Swiderski – Design memo or aid will be developed to accompany new details.

10. Open Pile Bent Rehabs (McCool, Wright, White, Schickel, Arnold, Merida)

- a. McCool – Task group met. McCool shared sample project details for repair on SEC pile with corrosion and full depth loss of steel section. White has reviewed. Group is working on developing standard details and guidance. Still working on guidance for repairs when deterioration is located at the top of the pile next to the underside of the slab.
- b. White – Intent is to develop design aid and sample details.
- c. Wright – Suggested extending additional new pile encasement down to bottom of riprap.

- d. McCool – Intent is to repair piles that were not scoped for replacement but were found to be in bad condition during construction, then they could be repaired during construction without significant change orders.
- e. Wright – Repair detail would be good for isolated pile repairs on projects that would otherwise only be thin deck overlays, for example.

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

- a. Task group met this week. Assignments given to develop sample USP and Bridge design aid for bridge railing retrofits and epoxy dowels to be used in significant structural applications. INDOT may be developing a new subset of the QPL for epoxies that satisfy ACI 355.4 and can be used for structural applications and an associated pay item. Group will have to meet a few more times to finish topic.

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

- a. McCool – Group is referencing other state DOTs for best language to be used in IDM. Wagner has worked on draft IDM language revisions. Group is looking at current FHWA and AASHTO steel design guidance documents to make sure the IDM does not conflict with those.

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

- a. White – Draft bridge design aid has been sent to committee for review and comment. A USP needs to be developed. Suggests that concrete screws be used if casting new nosing material.
- b. Wenning – Agrees that a general solution to the issue would be beneficial. Often the issue is not known to be present until construction is in progress to replace a joint seal.
- c. Schickel – Requested committee provide draft review comments to White within one week.

14. RC Slab IDM Figures (Wenning, Wagner, Merida, Borcharding, Wright)

- a. Wenning – Situation is that contractors are using beams to support RC slab falsework instead of piles. Group may not be able to come up with an exact dimension, but guidance may be that berm should be between 3'-0" and 3'-6" below the bottom of the slab to allow for installation of falsework beams. End bents will become taller than they were historically for RC slab bridges and wingwalls will become necessary.
- b. McCool – If we extend the height of the end bents and pour monolithically, we are creating a rigid frame and additional design checks and reinforcement will be necessary in the top of the cap.
- c. Wenning – Suggests that IDM details change to 9" pavement ledge width as the standard. White agreed and stated this change will be in the new end bent details currently being developed.
- d. White – If Contractor is going to use beams as falsework, then they should be required to determine their own screed elevations based on the falsework beams they are going to use. White will investigate possible revisions to the INDOT Standard Specifications to require the Contractor to account for the adjustments to the screed elevations based on their proposed falsework.

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

- a. White – Spaans is investigating the topic. Numerous variables affect the results. Her goals are to detect trends in the data and the level of scatter in the data. This will lead to developing guidance on how to handle situations where predicted cambers do not match actual values.

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

- a. White – No update.
- b. Spaans suggested that this topic can be combined with the Prestress Beam Camber task group. All task group members agreed.

- c. White – Group will determine guidance on allotment of necessary shims and how they will be paid.
- d. Spaans – Additional shims are now being shipped by Prestress Services, Inc. with box beams in high skew bridges.
- e. White – INDOT Specifications still need revised to formalize the need, quantity allotment, and payment for the additional shims required.

17. Approach slab and Rail Details (White, Borcharding, Wenning, Schickel)

- a. White – Task group has not yet met. Issue is the IA joints in the RCBA not lining up with the joint in the barrier. Cracks have also been seen when the barrier joint is perpendicular to the roadway, but the IA joint is skewed with the end bent. White proposed possible solutions of skewing joint in barrier rail with the end bent and providing a short bond break between the barrier concrete and the bridge deck directly over the IA joint.
- b. McCool – Concerned with small spalls in the acute corners of barrier rail if the railing joint follows the end bent skew.
- c. White – Task group will meet soon to discuss and develop guidance

18. New Business

- a. White – Gravix retaining walls has contacted INDOT. He solicited input from committee.
 - i. Wenning – Familiar with this product. Typical excavation limits can be reduced. Suggested a presentation on wall types and available products would be beneficial for design community.
 - ii. Schickel – Requested that Wenning provide an update from the INDOT Wall Committee as a “Recurring Business” item
- b. Wenning – Requested that a Bridge Design Conference date be established soon. Lesh stated that recurring usage of the auditorium by other government training programs, etc. are not scheduled through February 2025 yet. He will coordinate accordingly.

- c. Next meeting will be October 8, 2024 at 9:00 AM (EST).

Recurring Business

- Bridge Design Aids Update (Wagner)
- Standards Committee Updates (White)
 - Committee is working to develop better guidance for supports of deck reinforcement based on different beam types. IDM Figure is also being developed.
- Overlay Types (Hunter, White)
 - White – INDOT's goal is to eliminate the need for alternate bids. Instead, Contractor will just bid a "rigid deck overlay" and choose from multiple acceptable materials (LMC & Silica Fume) as defined in the Standard Specifications.
- Link Slab Design and Details (Wagner, Wenning, Schickel)
- Research Needs and Innovative Ideas Update (Wagner)

Bridge Design Conference Topics

- Pannel Discussion "Start to Finish of a Project"

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, Borcharding, Hunter, Merida)
- STM for End Bents (Arnold, Hailat, Hunter, Schickel, White)

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

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

- Concrete mix designs (White, Nelson, Wenning, McCool, Merida)
 - E5 / internally cured concrete, semi-lightweight, lightweight, rapid curing concrete in RCBA (currently a RSP), UHPC (nonproprietary)

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