**ASCE – INDOT**
**STRUCTURAL COMMITTEE**
**MEETING NO. 85 AGENDA**

**October 3rd, 2019**
**9:00 am, INDOT Room N642**

1. **Review and approve Meeting 73, 74, 75, 76, 78, 79, 80, 81, 82 and 84 minutes**. - Approved
2. **Bridge Design Conference Update and New Date January 21, 2020 (McCool)** – McCool to send out a Save-the-Date email
3. **ABC Conference (Hunter)** – Stephanie Wagner will attend
4. **Research Needs and Innovative Ideas (Rearick)** – Anne has not heard feedback yet on submitted topics. Seth Schickel mentioned that FWHA will allow proprietary materials on federal aid projects after October 2019. Pete White said that INDOT does not want proprietary material without review by INDOT. Preference for state made materials not made. Mike Wenning told Anne that LRFD vs LFD subcommittee will produce topics for research.
5. **Pile Design for 3-sided structures (White, Schickel, Borcherding, Hunter)** – Seth stated that an HNTB engineer in New York is currently researching this with the maker of the CANDE software. Pete White wants to produce reasonable guidance for Live Load distribution, etc. needed for pile reaction computations.
6. **Semi-integral bent details (Wagner, McCool, White, Schickel, Borcherding)** – Revised drawings are in review by subcommittee. Stephanie Wagner stated that new details will be created for new construction and a separate for rehabilitation. A couple projects have used the new details [I-69 project (HNTB) and a separate one on SR 247 (INDOT)]. New IDM figures and guidance will be produced. Brandon Arnold asked about keyway details accounting for skew and bridge curvature. Stephanie said these effects have been considered. Mike Eichenauer asked about bottom half fixity without use of battered piles or two rows of piles. He is concerned that just rotating single row piles 90 degrees does not provide enough rigidity. Stephanie and Pete White stated that

this topic should be considered in the guidance but that they don't believe it has been an issue. Mike Wenning stated he has seen problems with the current approach; expansion joints closing up due to movement of the bottom half of the bent. Mike Eichenauer questioned if battered piles could be used with MSE walls if the batter is backwards. No decision made. Sean Porter asked if subcommittee contacted contractors to solicit feedback. They have not, but stated they're basing the new details from Illinois DOT standards. He recommended the subcommittee still do that.

7. **Thin Deck vs. Joint Replacement (White, Yeager, Rearick, Wagner)** – Pete wants to come up with some Bridge Design Aids on thin deck overlay projects. He has started on these documents, but they are not yet ready for review. He is writing the bridge design aids per current spec, even though a new RSP will eventually be released. Biggest guidance is to help understand construction schedule and timeframes and how they should be considered when scoping projects. Mike Wenning asked for pointers to determine if base for existing joint is sound; none given. Pete encouraged designers and asset managers to consider age of structure, MOT requirements, etc. when scoping. These concepts will be part of the Bridge Design Aids. Pete mentioned that epoxy can be used for minor patching. Does not recommend using it on patches deeper than 2.5 inches; epoxy gets too hot and cracking can develop. Anne recommended Pete present to all INDOT asset management team. Anne said INDOT is researching contractor capacity and how many of these thin deck overlay projects should be programmed per year to not overburden contractor capacity. Jose Ortiz asked how IDM Ch. 412 will be affected. Pete stated that he will circle back with Ch. 412 to make sure scoping language is appropriate. Seth Schickel recommended that for thin deck overlay projects over railroads to keep scope within inside face of bridge railings to avoid RR coordination complications. Pete will send his notes on the topic to the entire Structures Committee sometime next week.
8. **LRFD vs LFD on Rehabilitation Projects (Hunter, McCool, Eichenauer, Wenning, Arnold)** – Subcommittee is creating a questionnaire for the entire design community to

solicit feedback on issues when using the different design codes. List will be created to help designers check only required code criteria per component. Then, if analyzing existing components using LRFD, guidance will be created for allowable overstress with LRFD, etc.

9. **Sand Bag Cofferdams (Hunter, Phillips)** – Pass. Jeremy & Elizabeth were not present at time this topic was mentioned.
10. **Elastomeric Bearing Pads (Wenning, White, Porter)** – Mike Wenning explained his project where elastomer was glued to taper plates and separated. Scope was changed to replace all bearings on the bridge. Pete White then explained new IDM language. Vulcanization will be the standard for all pads, where applicable. This may not be possible on box beams. INDOT's preference is to mechanically fasten pads so they cannot walk out from under beams, whether to the embedded steel plates in the beams or with a restrainer plate, etc. in the caps. Mike Wenning mentioned that any deviation to the INDOT standard drawings requires expensive destructive testing of the bearings, even if it is a change to the bearing plate dimensions. Pete recommended consistent top plate but use tapered shims to avoid this issue. He did not think that testing requirement could be changed. Suggested that language in the IDM be revised to recommend tapered shims. Mike Wenning mentioned that on rehab projects the thin side of a tapered plate might have to go to 0 inches; not able to fabricate. Pete asked that everyone review his proposed changes to the vulcanizing of the pad to the plate. The issue of the taper will be further discussed by the subcommittee. Ben Borcherding asked if standard drawings will be updated; Pete will look into it.
11. **Girder Stability (McCool, Arnold, Porter, Eichenauer, White)** – Move to "Parking Lot".
12. New Business
    a. **MSE Wall Shop Drawing Revision Checklist** – Mike Wenning stated that INDOT Testing & Materials has created checklists for reviewing MSE walls. The list was reviewed and edited by Elizabeth Phillips. New lists have items that fabricator, geotech, and EOR need to check. Separate lists for design and then

one for shop drawing review. Entire Structures Committee is to review the lists and provide feedback. Stephanie asked what the order of review would be during a project. Pete responded – contractor to EOR to geotech to INDOT. Checklist stays with INDOT and INDOT does not provide checklist to fabricator. EOR still to mark up and return shop drawings, etc. as usual. Stephanie recommended we provide all fabricators the checklist so they know what is expected and they can more easily provide the information to review. All agreed. Design review checklist discussed as to who should do it and when. Pete suggested it go through Bridge Review instead of Geotech. Jennifer Hart suggested it become part of Stage 3 submittal. Stephanie suggested that we send for Geotech review prior to Stage 3 submittal. For now, Structures Committee to review the checklist as though it will be part of Designer's responsibility. Stephanie suggested designers be responsible to go through it for our Stage 3 submittals, but it not become a submittal document. All concurred.

b. **WWF in Prestress Beams** – Pete White stated that ISS section 737 allows for it concurrently. WWF is an acceptable substitute. It hasn't happened yet as beams are typically designed using conventional rebar. Mahmoud Hailat is going to design a prestress beam with WWF to develop guidance for using WWF in prestressed beams. Lisa Haas stated there is not a concern from fabrication in terms of affects to labor unions. Mike Wenning asked if phi factor will change for steels greater than Grade 60; Pete will investigate. He will also look to see if there are any concerns or code provisions that consider the effects of welding the rebar. Bring back from "Parking Lot". Subcommittee will be Mahmoud, Lisa, Mike McCool, and Pete.

c. **TS-1 Rail** – Brandon Arnold presented local project where it was determined by Naveed (INDOT) that this rail was originally tested in a 16-inch RC Slab superstructure, not an 8-inch deck or top flange of a box beam. Pete will investigate.

d. **Expansion Joint Material** – Seth stated a contractor on an HNTB project wanted material to be specified (1/2" expansion joint material). Contractor wanted a spec for it. Jeremy Hunter thought question was raised due to issues with space at tops of MSE walls. Pete stated we don't specify material we want currently. Pete will look in to this. He agrees that we should now specify to ensure correct compressibility. Pete suggested this topic can also include Mike McCool, since Tyler Wolf has researched this previously.

e. **Brandon Arnold to send Pete information on new ASTM specs for bolts and shear studs**.

f. **Lisa Haas stated that fabricator can use self-consolidating concrete to help with multi-step process to fabricate box beams**. Exploratory committee to be formed, bring up at next meeting.

Recurring Business

Bridge Design Aids Updates (Hunter, Wagner)
Standards Committee Updates (Phillips) – New terminal joint details released.
Bridge Design Conference (McCool)
Overlay Types (Hunter, White) – INDOT is working on a polyester overlay project, will let this winter. Future possibility is for projects where MOT is difficult and closure times need to be as short as possible. "Kwik Bond" is the proprietary product name. Currently used for patching by INDOT Maintenance. Goes on 1" thick and has been around for ~ 30 years in other states. Do not need hydrodemolition. Mike Nelson (INDOT Concrete) recommends it. If it is successful, designer guidance will need to be developed. Material is not concrete; it is a chemical mixture. Very strong adhesion properties. It is more complicated than LMC. It requires specialized equipment and is expensive.

Also, for VE Overlay projects, we need to contact Stephanie or Mike Nelson to work with pre-bid meeting with contractors and testing requirements during construction. It is not conventional concrete.

Thin deck overlays should not be used on replacement approach slabs.

Next Committee Meeting Date: December 19, 2019. Meeting location will be **Room N925**.

Attendees should take the **EAST** elevators up to the 9th floor.

Research Projects

Link Slab Design and Details (Spahr, McCool, Wenning, Schickel)
Fire Damage on Concrete Bridges
Seismic Assessment Design and Retrofit
ABC Guide
Strut-and-Tie Modeling

Parking Lot

Concrete mix designs
Long term deflections in prestressed beams
WWF 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)**
NEXT Beams (McCool)**(still looking for applications)**
Hydro-demolition (Wagner)
Fiber Wrap (Jessop)
High Early Strength Concrete (Nelson)
Expansion Joints Options (Wagner, White, Eichenauer) **(PP)**
Bridge Design Conference (McCool)
Load Rating Policy and Procedures (Hunter)
Approach Slabs (Hailat,)

Bridge Deck Overhang Design (Wagner, McCool, Hunter, Eichenauer)

Pile Driving Recommendations

SIP Forms (Hunter)