

Structures Conference Room C

August 1, 2022

10:30 am

MEETING MINUTES

- 1) Meeting Kick-off – Came to order @ 10:35 am
 - a) Introductions and New Member Introductions
 - i) Anup Shah (Arcadis) and Elizabeth Lawes (VHB) have been elected to the sub-committee.

ATTENDEES

Brian Hanks – NCDOT Structures Management Unit
Tierre Peterson – NCDOT Structures Management Unit
Gichuru Muchane – NCDOT Structures Management Unit
Lee Cline – NCDOT Structures Management Unit
Nicole Brown – Alfred Benesch
Bradley Bell – Michael Baker
Domenic Coletti – HDR
Anup Shah – Arcadis
Elizabeth Lawes - VHB

- 2) Review of Previous Meeting Minutes
 - a) Previous Meeting Minutes were emailed for review and comment prior to the subcommittee meeting. No further comments on the minutes; the minutes have been approved.
- 3) Bridge Design Workshop Series
 - a) Workshop on Eliminating Bridge Joints with Link Slabs and Two-Bar Metal Rail MASH Crash Tests delivered 5/19 by SMU
 - i) Nicole will check with ACEC to see if the presentation slide deck is available and can be distributed
 - ii) Gichuru reiterated the differences in behavior exhibited by vehicles impacting flat face vs. sloped rails and how the head of the crash test dummy nearly struck the windshield in the flat face rail tests
 - iii) Designers need to be aware of these differences as well as the Department's preference to use sloped barrier rails for high-speed applications

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- b) Domenic Coletti and Aaron Earwood will present on Reliable Fit-Up for Steel Girder on August 17 at McKimmon Center from 11:30 am to 1 pm. Domenic will share the technical aspects and Aaron will present real world examples.
 - c) Committee decided the next bridge design workshop will be in February 2023 as there are already other conferences and training opportunities taking place in October and November (Steel Bridge Forum, 2022 ACEC/NCDOT Transportation Conference). A presentation on bridge bearings and joints given by Ron Watson is a strong contender for the next workshop Domenic to reach out to Ron regarding interest and timeline. Committee would like for a NCDOT representative to present with Ron Watson to share SMU application and practices.
 - d) Domenic provided a summary of currently identified workshop topics and potential candidates for removal. The spreadsheet will be redistributed to the committee once updated. Members are encouraged to add new ideas for workshops to the spreadsheet.
 - a. Possible topics to be deleted (Gichuru to speak with Brian): T-033, T-035, T-044 and T-048.
 - b. Possible new topics to be added: (1) CMGC overview and lessons learned and (2) SMU spring tour findings
- 4) Training Opportunities
- a) A Steel Bridge Forum event will be held on 10/27. The event is an in-person all-day session at the McKimmon Center. Nicole shared changes to the draft agenda – no topics have changed, but the committee did move the order of some of the presentations per Brian’s request. The agenda may require further changes given presenters’ availability. Nicole and Brad will coordinate with NSBA, the speakers, and ACEC.
 - b) Nick Pierce will be presenting on OpenBridge at the NCLUG Summer Conference. The conference will take place 8/23 thru 8/25. In addition to this presentation, SMU has videos and manuals to help consultants with the transition to OpenBridge. Nicholas Pierce is leading the SMU workshop on Day 3 (August 25th) from 1:40-5 pm.

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- c) Georgia/Carolinas PCI pushed the PCI Bridge Seminar to Spring 2023 such that it does not overlap with the Steel Bridge Forum planned for the Fall. Nicole will stay in touch with Ray Clark at PCI regarding specifics as the event approaches.
- d) Construction Site Visits / Field Visits
 - i) The committee discussed the possibility of consultants going on a local site visit for a bridge under construction (i.e. I-540). Due to the logistics this may be complicated, Gichuru will discuss with the department.
 - ii) The committee also discussed opening the Spring Field Review to consultants. The logistics could be complicated, as an alternative SMU proposed presenting on the Spring Field Review Findings and informed the committee the findings and minutes from the Spring Field Review are available on online. More discussions regarding the logistics of field visits will take place in future meetings.
 - iii) Steel fabrication shop and prestressing tour plants have traditionally taken place during NSBA and PCI conferences, not as standalone events. The committee discussed resuming these tours again.
- e) The 2022 ACEC/NCDOT Transportation Conference has been scheduled for November 30th and December 1st. Lunch keynote speaker has been arranged. Sponsorship opens late September / early October.

5) Anticipated PEF Opportunities

- a) The current Structures LSA has been extended to October 2023 (using the optional third year). It will be advertised next summer.
- b) Discussion of possible impacts of reallocating 2% of sales tax revenue to transportation starting FY 22-23, 4% in FY 23-24 and 6% thereafter. SMU. SMU has not been made aware of any revenue stream impacts to PEF engineering due to this legislation, this will likely go to construction as cost inflation and short falls in gas tax are affecting construction funding. IIJA funds are expected to be consistent for the next 5 years, at a minimum.
- c) SMU has completed prescreening 100 projects in the 5-year program and is scoring these projects based on complexity to program project

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schedules appropriately. 36 of the 100 projects are considered high priority and will be assigned and scoped in October/November. Most of these are anticipated to be turn-key/full delivery. The next set of projects from the 100 prescreening projects will be assigned in early 2023.

- d) SMU will be reaching out to consultants with bridge plan review opportunities under the GESC contract.
- e) SMU is open to marketing meetings with consultants. Consultants to coordinate with David.

6) Technical Discussion

a) Manual Revisions:

- i) Beth Quinn has transitioned from SMU to a Division 5 position. Not much movement has occurred regarding manual and standard drawing revisions due to this staff change.
- ii) No new update on FIB Standards. FIB Standards are not ready for official release. Consultants may request an advance copy of the draft standards if needed for a project. SMU is interested in hearing feedback on the consultants who have reviewed the draft standards. Mixing FIB beams with AASHTO girders or other shapes on a bridge is discouraged. Different girder types on the same bridge should be confirmed with SMU on a case-by-case basis. Until the standards are released, follow current NCDOT details on AASHTO and Bulb Tee beams as appropriate. This includes using embedded plate details and confinement reinforcing steel layouts similar to those of the existing NCDOT accepted beam types.
- iii) SMU is looking at adding emergency vehicles to LRFR requirements. These new Emergency Vehicles are the EV2 and EV3 as defined by the FAST Act. As these new provisions pertain generally to fire trucks SMU has had discussions with Fire Departments regarding the requirements. It was noted posting for the EV2 and EV3 can be confusing.

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- iv) A walls chapter is being added to the Structures Design Manual. The new chapter will break out and build upon the current requirements given in Chapter 12 (Miscellaneous) of the Structures Design Manual. The initial version of this chapter includes additional wall requirements. SMU continues to make progress on this new chapter.
 - v) SMU has had issues with cracking exhibited by integral end bents with MSE walls on various new bridges. This is seen more frequently with long wing walls. The cracking is thought to be due to the new detail where the integral diaphragm does not extend the full length of the cap. The decrease in material and resistance at the corner of the end bent and wing wall is causing cracking on long wing walls. Until there is an updated policy, consultants are encouraged to use the previous detail which extended the integral diaphragms the full length of the cap when long wing walls are required. Designers should also extend the lower “H” bars to the front face of the cap. As this is a unique issue, it will not be included in the ongoing integral end bent research.
 - vi) The new SP01 G047 Steel Price Adjustment was discussed. This is a contracting special provision and structural designers do not need to include additional information or quantities for this Special Provision.
- b) Research Projects:
- i) Integral Abutment Research- The research team is reviewing performance of many existing integral abutment bridges built around the State. No new updates.
 - ii) Strut & Tie – A research project for use of strut & tie modeling and design of deep concrete elements was initiated. This research is intended to help implement use of strut & tie modeling and design into SMU policy. No new updates.
 - iii) Carbon Fiber Repairs – A NCSU research project for use of carbon fiber repairs/retrofit for improving load rating capacity of existing bridges is being performed. Currently working out final capacity increases for cored slab, box beam and channel beam bridges. The

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repairs are only intended to be used for stream crossing applications.
Still working to get a finalized report.

- iv) The research projects selected for this year focus on preservation and evaluating bridges impacted by traffic. No new design guidance is anticipated from these projects.

7) Open Discussion Other Topics

- a) Zia Annual Lecture will take place September 19 from 3-5 pm at NC States campus – keep an eye out for this training opportunity.
- b) Several states are involved in a pooled fund research project focusing on BIM for structures and implementation. The goal is to develop IFC standards promoting compatibility of BIM and design software packages. This will be a presentation topic at the ACEC Conference in October/November.

8) Next Meeting: November 7, 2022