

ACEC/NCDOT
STRUCTURES SUBCOMMITTEE



Structures Conference Room C
May 6, 2024, 10:30 AM

MEETING NOTES

1) **Attendance**

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|--------------------|--------------------|
| a) Brian Hanks | g) Tom Koch |
| b) Trey Carroll | h) Domenic Coletti |
| c) David Stutts | i) Liz Lawes |
| d) Gichuru Muchane | j) Greg Cols |
| e) Tierre Peterson | k) Emily Murray |
| f) Hoang Dieu | l) Jeff Loftus |

2) **Meeting Kick-off**

- a) Reviewed previously approved and published minutes from 2-5-2023 meeting.
- b) Welcomed new PEF member Greg Cols.
- c) Discussed subcommittee member rotations:
 - i) Domenic Coletti and Tom Koch are rotating off.
 - ii) Recommendations for new PEF members due to ACEC May 10, 2024.

3) **Bridge Design Workshop Series**

- a) Reviewed Bridge Design Workshop tracking spreadsheet:
 - i) Topic T-056, Harkers Island: Trey Carroll and others will present on the Harkers Island project during a lunch workshop on May 7, 2024, at McKimmon Center.
 - ii) Topic T-064, Perquimanns Movable Bridge: The subcommittee was still interested in the possibility of having this presentation as a lunchtime workshop in early fall (September +/-) 2024. Domenic Coletti will follow up with David Ragan of H&H to confirm his interest. Last contact (4-12-24) from David indicated he was interested but he had not yet been able to secure a co-presenter from the contractor.
 - iii) Topic T-057, CMGC Project Delivery: The subcommittee was still interested in the possibility of having this presentation as a lunchtime workshop in January or February of 2025. Liz Lawes will follow up with Nicole Brown to discuss details, including NCDOT and contractor co-presenters.
 - iv) Topic T-061, Corrosion Policy Refresher/Updates: The subcommittee was still interested in the possibility of having this presentation as a lunchtime workshop after the NSBA Steel Bridge Forum (i.e., late March, or April or May of 2025). Brian Hanks encouraged continued coordination about this with Prof. Tara

Cavalline at UNCC (who conducted related recent research for NCDOT). Liz Lawes will follow up with Prof. Cavalline.

- v) No other new topics or changes to previously proposed topics were discussed.

4) **Training Opportunities**

- a) Feedback from recent PCI Bridge Design Workshop:
 - i) Feedback was generally positive.
 - ii) The workshop provided a lot of good guidance and information for younger designers.
 - iii) The Harkers Island presentation was well-received.
 - iv) The industry panel discussion was very good but was too short; a longer discussion would be good in the future.
 - v) Emily Murray asked if ACEC shares the feedback they get when they survey participants for PDH credit; Domenic Coletti said he would contact ACEC to request that feedback for this and other recent ACEC/NCDOT Structures workshops.
- b) Discuss topics for NSBA Raleigh Steel Bridge Forum spring of 2025:
 - i) The tentative potential topic list was reviewed.
 - ii) Adding an industry panel discussion with designers, detailers, fabricators, and erectors would be good.
 - iii) A presentation by Mike Grubb reviewing the upcoming AASHTO LRFD BDS 10th Edition changes would be good.
 - iv) The topic “What the Detailer Uses from the Design Plans” by Randy Harrison, Brad Fillman, Bill Lally, or others, would be good.
 - v) Any presentation by Dr. Rob Connor would be good (either “Steel Bridge Fatigue and Fracture – A Refresher for the Practicing Bridge Engineer” or other topic).
 - vi) A local NCDOT project of interest would be good. At the last NSBA Steel Bridge Forum, John Sloan presented on the Green River Bridge rehabilitation and the presentation was very well received.
 - vii) Domenic said that NSBA was on board with having the Forum in March of 2025 +/-, and that Chris Garrell at NSBA had passed the coordination for this NSBA Forum to Jeff Carlson of NSBA.
 - viii) Domenic Coletti will update the topic list and discuss with Liz Lawes who will carry forward the coordination with NSBA. The subcommittee should try to firm up their list of preferred topics within the next few months so that NSBA has sufficient time to secure commitments from presenters.
- c) Other training opportunities.
 - i) NCDOT/NC GO!/NC Chamber Fifth Annual N.C. Transportation Summit, May 21-22, 2024, Koury Convention Center in Greensboro, NC
 - ii) WTS:
 - WTS Annual Conference is May 6-10, 2024
 - WTS Go Gala May 16, 2024

- WTS Luncheon June 26, 2024
 - iii) NCDOT CLEAR Lunch and Learn, “NCDOT Revenue and Funding for Projects,” June 24, 2024
 - iv) Paul Zia Distinguished Lecture Series
 - Fall of 2024: “Frederick Douglass Memorial Bridge in Washington, DC,” October 7, 2024.
 - Fall of 2025: Harkers Island project.
 - v) ACEC/NCDOT Joint Transportation Conference October 10-11, 2024.
- 5) **Anticipated Current and Future PEF Opportunities**
- a) Updates on management of current and future bridge replacement projects:
 - i) Management of bridge replacement projects is being moved from SMU to PMU (approximately 50 projects). By end of May, all transferred projects will have PMU project managers. A few ongoing projects that are very close to letting will continue to be managed by SMU.
 - ii) Upcoming bridge replacement project assignments (under the current Structures LSC contracts) will be managed by PMU. SMU will identify projects for assignment to PEFs, and will send those projects to PMU. PMU has requested that they have some say in selection of PEF firm for each project assignment (with input from SMU).
 - iii) The next round of Structures LSC contracts (potentially two years from now) will not include the “Bridge Replacement Planning & Design” category. Planning & Design will be managed by PMU. Assignments for Bridge Program projects will have input from SMU.”.
 - iv) The overall intent of these changes is to allow SMU’s PEF/Program Management group (David Stutt’s group) to focus on reviewing project scopes and estimates and serving as the bridge subject matter experts (SMEs) for PMU and the Divisions.
 - b) SMU will continue to be involved in bridge preservation projects. Most of the notes above apply primarily to bridge replacement projects.
 - c) PEF Performance Evaluation Forms: David Stutt encouraged PEFs to communicate proactively about these evaluations; don’t just turn in work, wait for your score, and not discuss the evaluation.
 - d) QC and QA Checklists: SMU is continuing to work on formatting of the template document to facilitate including signatures. The QC and QA checklist form templates will be provided in MS Word for the time being. Always download the latest version of the QC and QA forms from the NCDOT website (current versions are dated December 19, 2023). It is OK for PEFs to submit their QC forms in either MS Word or PDF format, as long as a signature is included.
 - e) “Policy interpretation” between SMU and Divisions – SMU understands that the SMU Manual does not (and cannot) cover every possible scenario. PEFs are encouraged to engage both SMU and the Division to discuss situations on specific projects that are not directly covered in the SMU Manual; early communication by the PEF to facilitate discussion is key.

6) **Technical Topics**

- a) Recent revisions to manuals, standards, etc.
 - i) No major changes at this time.
- b) Upcoming revisions to manuals, standards, etc.
 - i) SMU's Policy Development group is currently focused on developing design manual guidance and standards for timber bridges. The intent is that the timber bridge standards would be similar in format and scope to the current cored slab bridge standards. The timber bridge standards are intended to be used in Divisions 11, 13, and 14, where many of the deficient bridges are small bridges with timber elements on small, mountainous, low traffic volume, often dead-end roads. The anticipated timber bridge details will feature rolled steel beam stringers, timber decks and railings, and concrete spread footing substructures; the intent is to facilitate easy construction using small equipment and small, lightweight elements due to access challenges to many of the bridge sites. The manual and standards are currently in draft form but have not been reviewed yet. The standards will include load rating info. NCDOT will need multiple PEFs to help assemble contract plans packages for these projects. Until the manual and standards are published, PEFs who are assigned a project like this can contact Nick Pierce to request access to the unchecked design guidance and standards. Most of the projects will include bridge replacement but will involve all disciplines, with a heavy focus on bridge hydraulics. The projects will not include improvements to the overall facility, i.e., no addition of shoulders or increasing of shoulder width, no provision for approach guardrail when current conditions do not include guardrail, etc. The design of these projects is expected to conform to the design of the existing road facility, most of which are small, low traffic volume, dirt, dead end roads.
- c) Digital Delivery, OBD/Open X, and ProjectWise implementation: No updates.
- d) Research project updates.
 - i) Deck Crack Sealant Selection research project: This project was recently completed, and included the development of a spreadsheet that helps select an appropriate crack sealant for the given conditions. The research report will be published on the NCDOT website.
 - ii) Strut and Tie research project: This research project is still ongoing.
 - iii) Concrete Girder Impact research project: This research project is still ongoing.

7) **Open Discussion/Other Topics**

- a) Standard P-joint (Strip Seal Joint): The mill that produces the steel joint shape has closed, but DS Brown has the ability to produce the steel joint. Price has gone up since there is only one supplier. NCDOT has been working with PennDOT to resolve this issue. For now, it is OK to keep

- specifying this joint, in accordance with the published SMU Manual policy.
- b) PS Girder Camber: NCDOT and other owners have noticed a trend where more prestressed girders are under-cambered (flat or sagging); the suspected cause is the use of concrete with higher than specified strength. GDOT has reached out to NCDOT to discuss this issue. NCDOT is considering specifying a minimum acceptable as-fabricated camber dimension on the plans; if the as-fabricated girder does not meet that value, girder may be rejected. In the meantime, designers are encouraged to design girders that are predicted to have at least a minimum 1/2" camber after deck placement (as predicted using NCDOT's refined analysis method/spreadsheets).
 - c) Wisconsin Deck Pour Sequence: During the recent Spring Tour, SMU staff observed a four span continuous steel girder bridge with short interior spans and long end spans (with a span balance that resulted in upward deflection of the girders in the interior spans during deck placement). The plans specified that the short interior span be placed first; this resulted in the interior span deck being subject to negative moment (tension in the deck) during subsequent pours in the deck pour sequence, which led to cracking of the interior span deck. The message to communicate to designers is this: Reiterate that the theory behind the Wisconsin deck pour sequence is to avoid negative moment in a previously poured section of the deck; consider each bridge and its span arrangement and specify a logical deck placement sequence that will avoid subjecting previously poured segments of the deck to negative moment when later segments are poured.
 - d) Edge of Deck (Expansion Joint) Diaphragms for FIB Girder Bridges with Heavy Skews: NCDOT recently noted the case of a single span bridge with 36" FIBs and heavy skew where a significant portion of the edge beam (diaphragm) under the wide top flange was completely unreinforced and was falling off. One potential design policy solution may be to omit the portion of the diaphragm under the wide top flange.

8) **Next Meeting: August 5, 2024**