ACEC/Maine DOT Bridge Design Subcommittee

MEETING MINUTES

March 10, 2020

Location
MaineDOT, Room # 317 A-B

Time
1:00 PM to 3:00 PM

Purpose of Meeting
1st Quarter Meeting - 2020

Invitees

★ Wayne Frankhauser, MaineDOT
★ Jeff Folsom, MaineDOT
★ Leanne Timberlake, MaineDOT
★ Rich Myers, MaineDOT
★ Garrett Gustafson, MaineDOT
★ Laura Krusinski, MaineDOT
☐ Kathy Parlin, MaineDOT
☐ Ben Foster, MaineDOT
★ Jenn MacGregor, Kleinfelder
★ Jaime French, Fuss & O'Neill
★ Adam Stockin, WSP
★ Josh Olund, HNTB
★ Jason Gallant, HDR

AGENDA ITEMS

1. Introductions
    a. This meeting was Jason Gallant's first meeting (Q1-20 thru Q4-21).
    b. Jenn MacGregor led this meeting on behalf of ACEC.
    c. Jaime French will lead the next meeting on behalf of ACEC.
        - Jaime will reach out to Dale Mitchell to confirm:
            - Who is next on the list for ACEC members of the subcommittee
            - What has been recommended for committee member term limits

2. Information Dissemination by MaineDOT

    a. Contracting / workload

        - The Bridge Program is executing its 2020 capital projects plan; work plan is somewhat lighter this year.
        - Seven projects have advertised as of the meeting date. Four projects may be tabled for budget reasons. Project estimates have been recalibrated such that bids were coming in within 2% of estimate as of October 2019. Recalibration included bumping 2018 bid prices by 20%. The last half of 2019 project bids provided some good data to reset bid history with more bidders submitting on projects.
        - Workload summary (originally reported December 2019)
            - 2020 – 44 projects – $207 million (including grants)
            - 2021 – 56 projects – $200 million (including grants)
            - 2022 – 50 projects – $144 million (including grants)
        - Station 46 Bridge- This project was awarded a $25M 2019 BUILD grant. The expected construction cost is $30 million. The project is under design and scheduled for September 2021 advertisement.

- The Department submitted an INFRA Grant for Freight Reliability for Maine (FRAME) in the amount of ~$42M. The project includes ~32M in bridge projects: Two that carry freight on Critical Urban Freight Corridors and six that are part of the NHS.
- The Department-wide RFQ is underway.
    - Scoring is complete and short list has been developed. Interviews have been set up. The Bridge Program took a tiered approach: the top five were exempt from interview. The next 10, (ranked 6 to 15) will interview for five remaining GCA's. Overall GCA's will be reduced from 14 to 10. The Bridge Program can use simplified acquisition of services for fees up to $250,000.

b. MaineDOT Staffing Update:

- New Employees – An Assistant Transportation Engineer (ATE) will start in May. One ATE recently left the Department for a position in Michigan. The Bridge Program is collaborating with the Highway Program to fill the position. There are 14 applicants under consideration.

3. Summary of Designer Meetings (Rich, Garrett) : There was one meeting with two topics
    a. Elastomeric and Disc Bearings:
        - The Bridge Deign Guide (BDG) leans toward elastomeric bearings
            - It was noted that uniform bearing is difficult to maintain with lightly loaded disc bearings.
            - Disc bearings may induce unintended loads into substructure elements – consider carefully
            - Bearing height restrictions to be considered.
            - BDG update to be considered to allow additional consideration for disc bearings

    b. BDG update and re-write discussion:
        - An outline has been assigned
        - A survey has been conducted on the BDG that included 7 outside consultants, three internal bridge designers and one geotechnical engineer.
        - The vision for the update is to have an online linked PDF BDG that can be printed in sections as needed
        - The existing BDG is to be used for sections not yet rewritten.
        - Consultant community input will be sought through ACEC/Bridge design subcommittee
            - Sections will be shared as they are ready.
            - Garrett will evaluate Sections of the BDG for prioritization. Jeff noted Section 2 (Preliminary Design) will likely be first.
            - Section 5 (Substructures) was reviewed recently and will likely not be updated.

4. Discussion Topics

    a. Geotechnical (Laura K.)

    - Cohesive Soil Scour: FHWA testing at the Scarborough Maintenance Lot completed in July 2019.
        - Report sent to Turner-Fairbanks for review
        - No changes expected until new version of HEC 18 is released.
    - Final EDC5 progress report was submitted in July 2019.
        - Update - Brewer Edington for using proven, yet under-utilized geotechnical tools. Not awarded funds under EDC for Phase 2 geotech explorations. Anticipated August 2020 if and when this project moves forward.
    - Next EDC summit Is Nashville, March 17. Kate Maguire scheduled to attend.

    b. Continuation of previous discussion

    - ACEC NH- Knowledge Share- Adam Stockin
        - Bob Landry, NHDOT Bridge Design Bureau Administrator retired. Loretta Doughty has been appointed the new Administrator.
        - NHDOT completed its first lateral slide in Ossipee
        - NHDES posted new stream crossing guidelines 12/15/19. 2.2x bank full width is the new potential span requirement new environmental rules.
        - Updated MASH testing has resulted in 4 additional bars in the deck at rail anchorage in lieu of former 3 bars. NHDOT has anew brush curb detail that is centered under the rail post.
        - Thermal spray coatings – applied at 10 mil thickness per NHDOT standards.
        - NHI Bridge Rehabilitation class (Bridge Maintenance (ILT) FHWA-NHI-130108 - NHDOT will not offer until later in 2020. VT offering in Fall 2020.
        - Constructability reviews – to be completed earlier in design phase, especially for firms that do not have construction personnel in house.
        - Question on whether NH will host a micropile design course. Adam to check into it.
    - Publishing of Standard Notes – pending
    - MaineDOT is publishing a new Standard Details Book along with new Standard Specifications
    - Updates to Construction Cost Estimating and Data Methods –
        - MaineDOT is evaluating AASHTOWare estimating model (by Infotech)

a. Accommodates bottoms-up estimates
b. Estimate can be built based on historic data
c. Currently exploring a six-month trial version
d. Assume costs can be over-ridden for special items
e. It was noted that some states use an online portal for estimate generation
f. Update planned for next meeting

- Estimating item of note: box culvert costs can be underestimated if wall thicknesses are not properly accounted for.

- PIC submittals and Utility / ROW coordination
  - Update on memo outlining expectations – Garret and Rich have developed a memo on PDR, PIC and PSE that will be issued after review.

- MaineDOT CADD standards and deliverables – Update on workshops or webinars: No new discussion on conversion to Connects version of Bentley

- Low shrinkage concrete testing and results update – UMO (Eric Landis) scheduled to do some research with MaineDOT (Dale Peabody). A draft problem statement has been developed. MaineDOT has testing equipment for dry shrinkage cracking. MaineDOT has questions on the mix design, still in development. No further updates at this time.

- Computer simulation for MASH crash testing update – MaineDOT has developed a process for the Chief Engineer's approval of the common MaineDOT rails used based on simulation results.

  - Currently evaluating tube wall thickness on 4-Bar Rail (1/4" to 5/16").
  - 3-Bar Transition Rail will be included in the new Standard Details book.

- Bare concrete decks – Adam forwarded photos and specs to Jeff
  - Adam will follow up with diamond grinding information.
  - Lunt Road Bridge Discussion:
    a. Skew considerations
    b. Longer placement time and use of retarder
    c. Considerations of cement quantity
    d. Time of year considerations
    e. Temperature considerations
  - Subcommittee members will provide information for consideration based on the practices of VT, NY, MA, CT, VA, WA, MN, NH, CA and general National Practice:
    a. Mix design
    b. Curing / placement
    c. Testing
    d. Trends

c. New discussion items

- Integral abutments – orientation of wingwalls, span length limitations?
    - WSP is performing an evaluation of integral ridges with initial focus on NE states.
        - NH/ME use in-line wingwalls
        - All others use U-back wingwalls
    - Evaluating end-bearing micropile supports. Adam will present the NHDOT Durham Bunker Creek project at this group's next meeting.

d. Training Areas

- Topics related to up-coming projects/program goals?
    - NHI Rehabilitation course – rehabilitation maybe have someone from MaineDOT to attend. (Discussed previously in this meeting under knowledge share).
- Micropile Design - (Discussed previously in this meeting under knowledge share).
- Structural Stability in Bridge Construction – Jeff will send a poll and MaineDOT will consider hosting if there is interest.

5. Subcommittee Rotation for Consultants

(2-yr rotations for new members joining 2014 and later)

a. Jennifer McGregor, Kleinfelder (Geotech Rep)	Q2 2018 thru Q2 2020
b. Jaime French, Fuss & O'Neill	Q2 2018 thru Q2 2020
c. Adam Stockin, WSP	Q4 2018 thru Q3 2020
d. Josh Olund, HNTB	Q2 2019 thru Q1 2021
e. Jason Gallant, HDR	Q1 2020 thru Q4 2021

6. The Next Meeting is set for Tuesday, June 9 at 1 p.m.

Designers Meeting Minutes

February 12, 2020

Conference Room 317 A&B

1:00-2:30 PM

1. Discussion of Elastomeric Bearings Vs Disc Bearings

- The issue came up due to bearings on Veterans Remembrance bridge in Bangor which has pot bearings and Norridgewock concrete arch bridge with Elastomeric bearings. The Elastomeric bearings in Norridgewock experienced bulging of the elastomer due to possible overload and rotation effects that exceeded the bearings capacity. The s.s. sliding plates experienced delam from sole plate.

- The Wilson Street Bridge is in design and we are trying to decide on the bearing type.

- Questions were raised as to where and in what situations Disc bearings were used, and how they are performing up to date. The Bridge program is leaning toward more use of disc bearings where it is suitable to do so; since cost difference between Elastomeric and Disc bearing has leveled out in the past few years. Lightly loaded Disc bearings, however can be difficult to design and manufacture.

- Problems with pot bearings on many bridges were discussed ranging from elastomer and ring failure to corrosion of the sole and bearing plates due to lack of Galvanization and harsh weather elements. Discs are generally a better product.

- Foundation problems such as shifts in abutments and difference in abutments heights were also to blame for failure of some bearings including highly tipped rocker bearings.

- Discussion on Disk and Pot expansion bearings ensued on the PTFE plate performance that is responsible to provide sliding and movement action, and whether some movement is guided through guide bars or non-guided. And restriction of such movement due to the PTFE wearing out with use.

- Skews and curved geometry provided other problems for elastomeric bearings. It was noted that the bearings were overly rotated, tipped, and deflected on some bridges. The consensus is that Disc bearings should better be able to handle such situations.

Designers Meeting Minutes

- The BDG is about to be revised and it is recommended that language be provided to guide the designer on the choice between Elastomeric and Disc Bearings.

- For simple geometry, small movements, and light loads, elastomeric bearings are still likely preferred. They have a long track record of good performance/ durability.

- Pot Bearings are to be limited in use if not completely discontinued due to many problems in their performance that have resulted in costly replacements and or rehabilitations.

2- BDG Rewrite

- Jeff Folsom announced the direction of the bridge program to rewrite the BDG, which was written in 2002. Since that time many revisions and updates have taken place. For example, the entire section 5- Substructures has been revised to reflect LRFD design. Some other sections had some updates, but the BDG remain scattered in its paper form and the department wants to update and transform it section by section to fully electronic PDF format. This should be accomplished handling it one section at a time. Links should be formed to the proper sections for easy access by the users. The task should start with Section 1 and continue there on forward. After each section is written, the PDF document should be available for all to make comments, suggest elimination or addition of language. The technical part should be revised to reflect current design standards and details. This effort should start soon in the hope of having one unified BDG that can be used by all stakeholders including engineers, technicians, managers, and contractors. Mackenzie Kersbergen expressed willingness to start this effort.

END OF MINUTES

By:

Roger Naous
Transportation Engineer II
Designers Meeting Secretary