ACEC/Maine DOT Bridge Design Subcommittee

MEETING MINUTES

17 March 2015

Attendees:		**Location:** MaineDOT Room 421 B
Mike Wight	MaineDOT	
Rich Myers	MaineDOT	
Wayne Frankhauser	MaineDOT	
Laura Krusinski	MaineDOT	
Leanne Timberlake	MaineDOT	**Time:** 10:00AM – 11:30AM
Ben Foster	MaineDOT	
Chris Snow	GZA	
Craig Weaver	Kleinfelder	
Steve Hodgdon	VHB	
Tom Kendrick	MJ	
Keith Donington	Parsons Brinckerhoff	**Notes Taken By:** Steve Hodgdon SMH

This was the first quarter ACEC/MaineDOT Bridge Design Subcommittee meeting. Minutes from last meeting OK.

- **Information from MaineDOT**
  - Results from Keeping our Bridges Safe Report 2014 is a request for more funds. Approximately $35M/yr in 16 and 17 with focus on preservation. About ½ could be put in PE for current Work Plan projects.
  - Lots of staff changes including retirements/promotions… Alan Nadeu and Calvin Seeley retired. Steve Boge is a manager in Hwy Program now. Mike Wight in now a PM in Team North. Hired 2 in the Fabrication Unit. In the process of hiring AE's.
  - Devin Anderson as Sr PM will continue to have same role in Construction but also develop some preservation projects on PE side.
  - Bridge GCA interviews wrap up in March. 16 interviewed. Geotech GCA process 3 more weeks. Hope to have GCA's in place by end April early May. Firms shortlisted for Section 804.10 will have 6 GCA's. For Geophysics all prequalified and 2 interviewed for GCA's.

- **Designer's Meetings (2/4/15)**
  - See attached. Topics included: NEXT F Beams and cracking issues; 3D Design and Construction; and Feasibility of Rehabilitating Structures.

- **Bridge Rating Update**
  - Load rating guide update is being submitted to council in April
  - Probably no more ratings than these next under this inspection cycle
  - RFP on truss inspection/climbing and moveable bridges will be going out through GCA's.

- **Training**
  - Interest on NHI Hydraulic Design of Bridges in September

- **NEXT F Beam Cracking in Stowe VT**
  - Steve discussed the bridge in Vermont that has some cracking in the NEXT Beam ends and deck since VHB asked to assist VTrans with analysis and load testing.
  - VHB not charged with developing any forensics or recommendations so general take-aways were discussed including:
    - Importance of designing and detailing for fixities and end moments where they can occur – even if beam design is based on simple span behavior.
    - Consideration of pouring backalls as separate pour from the deck for integral bridges to minimize locked-in stresses.
    - Tall integral abutments can generate large earth pressures and restraining moments. This should be considered in design and selection of span and abutment type (integral, semi-integral, traditional)
    - Consider skewed bridge behaviors during construction and when subject to live load.

- **Other**
  - Jack Burgess from Becker Structural will be joining the group next meeting.

- **Next Meeting Date**
  - June 16 at 1:30PM - MaineDOT Conference Room 317.
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Attachments:
Designer Meeting Minutes (2/4/15)

I have attempted to summarize discussions held during this meeting as accurately as possible. If there are any items discussed herein that are misrepresented in any way, please contact me by June 16th. In the absence of any corrections or clarifications, it will be understood that these minutes accurately summarize the discussions at the meeting.

Respectfully Submitted,

Steven Hodgdon

Designers Meeting Minutes

Wednesday, 4 February 2015

Conference Room 317 A&B

1:00-2:00 PM

Attendees: Mike Wight, Devan Eaton, Joel Veilleux, Joe Stilwell, Rich Myers, Andrew Lathe, Mark Parlin, Josh Hasbrouck, Travis Hamel, Roger Naous, Bob Bulger

1. **NEXT F Beams Cracking Issues**
Bob Bulger

Bob's notes from the last PCI NE meeting were attached to an agenda last fall. VT has issued a moratorium on NEXT F and E type beams (i.e. beams with 4" decks) due to cracking in some beams. There is no solid explanation of why, but various people have suggested either too much tensile stress when the forms are removed or too much prestressing in the top of the beam. Better loss calculations would reduce cracking. There are known issues with Conspan and the top strands and mild reinforcement in some cases, which Roger Naous agreed affected calculations. He also stated that for the tensile stress cases, the 200 psi rule in AASHTO generally controlled and sometimes required extensive debonding.

The biggest issues are in bridges with skews. Joe Stilwell stated that PCI guidance limits skews in NEXT beams to 30 degrees. Bob thinks that for F-type, skews greater than 30 degrees are asking for trouble. Roger agrees that skews are an issue and should be limited in NEXT beams and voided slabs when possible.

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2. **3D Design and Construction/E-Construction**
Travis Hamel

Team North met previously to discuss a pilot project using the EDC 3D design and e-construction initiatives. The subject was brought to the Designers Meeting to allow other people to give input and express interest or point out areas where this might be useful or not. The focus at this stage is on using 3D modelling to design the approaches and improve estimate accuracy.

Andrew Lathe explained that they were looking specifically at bridges with large amounts of approach work, since this seemed like the area where there was the most to be gained right now. Mike Wight concurred and added that the bridge industry has not reached the same level of 3D modelling through the entire design-fabrication-

construction as the building industry has with BIM. He also clarified that 3D modelling is discussed both as renderings for improved visualizations and as a full design model.

Mark Parlin questioned how we would check and review the 3D model and how to handle liability providing the model to contractors. Travis explained how other states had used review procedures similar to how we handle shop drawings and that initially data could be issued with a disclaimer to remove the Department from liability.

Travis and Bob discussed ways in which GPS capabilities could be useful in the field, including easily checking elevation and position of bridge bearings. A small number of the residents are using about three-quarters digital recordkeeping already and using 3D models would be the next step.

The general consensus was that 3D modelling would make the biggest impact in approach work and sites with a large amount of conflicts to be resolved at this stage, and little benefit would come from trying to build a full superstructure on most projects, especially small bridges.

3. **Feasibility of Rehabbing Substructures**
Rich Myers and Joe Stilwell

This was brought up at the end of the meeting for short discussion and gathering opinions, but not to try and decide anything. More often now we are looking at repair or rehab options vs. full replacements, but determining when to rehab or not is always difficult. Destructive testing of concrete cores was suggested as a way to improve the decision, but Mike Wight gave the caveat that they had done testing on a bridge in Island Falls but the results were not representative of the whole abutment when they started removing concrete in the field. Bob Bulger mentioned that if there is any evidence of the abutment moving that was a good indicator that saving it isn't desirable. The general rule of thumb was suggested that if the substructure will need to be repaired 3-4 times during the life of the superstructure it should probably be replaced. No discussion of detailed life-cycle cost analysis took place at this meeting.