

ACEC/Maine DOT Bridge Design Subcommittee

MEETING MINUTES

March 18, 2009

Attendees:

Location: MDOT Conference Room #318

Bob Ellena	MaineDOT
Laura Krusinski	MaineDOT
Leanne Timberlake	MaineDOT
Wayne Frankhauser	MaineDOT
Jeff Folsom	MaineDOT
Naomi Petley	MaineDOT
Wade Brown	SEA
Chris Taylor	TY-Lin
Tim Cote	HNTB
Steven Hodgdon	VHB

Notes Taken By: Steven Hodgdon

This is the first ACEC/Maine Bridge Design Subcommittee meeting this year.

- **Introductions and Committee Member Changes (Tim Cote)**
 - Tim noted that this was the last meeting for Wade Brown (SEA) and introduced Chris Taylor (TY-Lin) as the newest consultant member of the committee.
 - Wade thanked the committee for their support and opportunity to participate during his tenure.

- **Information Dissemination from MaineDOT (Wayne Frankhauser)**
 - The 2-yr work plan is now finalized. Approximately \$240M for 2010-2011. This provides construction funding for most of the projects in progress.
 - Bridge Stimulus List is now final. Seven bridges are included. The funding is a little lower than expected but these projects are underway. There are a few that the Department has to accelerate faster than they would prefer but the projects are going forward.
 - The GCA submittals are in. Naomi Petley noted that they expect to have the prequal list by April 1st. After that, the evaluation process will begin and by the end of June hope to have all GCA contracts in place with authorization thru 2011. Naomi noted that probably a few additional consultants will be added (currently about ten consultants). Some interviews may be done. For consultants already under contract, the need for interviews will be at the discretion of the Department.

➤ **Various Discussion Topics**

- There was some discussion with respect to how work is executed under the GCA contracts. For assignments <\$100k, this can be sole-sourced to one of the on-call consultants. For assignments >\$500k, a competitive RFP process is needed. For assignments in between these values, it remains a bit unclear since there has been a lot of discussion on this with ACEC. Perhaps three competitive proposals are needed to evaluate/select for assignments in the 100k-500k range.
- The Consultant Manual is still in draft form and is being finalized by the Department. Contact Debbie Farrell for information.
- Tim noted that Steve Percassi from Erdman Anthony & Associates expressed interest in joining the committee as the last vacant position after Tim leaves this fall. No objections from the committee provided the consultant is willing to travel and make the meetings.
- Steve Hodgdon (VHB) will be leaving the committee at the next meeting while new consultant member Wayne Chadbourne (Haley & Aldrich) takes his place.
- The group discussed the Departments load rating process:
 - A form has been finalized for LRFR load ratings. Tim requested an electronic copy to forward to consultants. Wayne will check to see if he can get a copy for distribution.
 - The Department does not have any specific software requirements mandated for the LRFR ratings. (Tim noted that some states have specific requirements).
 - Ratings are usually done at the end of the design phase, not in the construction phase of a project (except for special instances where the construction sequence and means/methods can have a significant affect on the rating). Consultants need to make sure the load rating hours are in their proposal to do this work as part of the PE phase.
- The new Bridge Design Guide (BDG) is nearly complete. For the most part, the BDG is similar to the existing except it has been updated to the LRFD spec – particularly in the foundations related chapters. Laura anticipates a draft version will be issued (to Department and Consultants) for review/comment sometime in mid May.
- The issue date of the final BDG is uncertain. The Department is hopeful it will be available this summer.
- Laura could not speak to any of the changes related to Seismic Design in the BDG, but changes have been made to reflect recent changes in the AASHTO LRFD code.
- The Consultant Performance Evaluation Form has been finalized. Naomi will provide a copy to Tim to forward to consultants. This form is not intended for just consultants doing bridge work but for all consultants - Department wide. As such it has several pages and perhaps portions that are not applicable to all.

- The group discussed using the Next Beam on MaineDOT projects:
 - To date it has not been used and the forms have yet to be purchased by local precasters. Tim noted that he discussed this with Rita Seraderian (PCI New England) and she indicated that the cost associated with purchasing the forms should not be a factor when evaluating this beam section since the precaster will amortized the purchase cost over the life of the forms instead of lumping a large portion of the purchase cost into the unit price bid.
 - Steve Hodgdon briefly described a project that VHB is working with MaineDOT on that uses the NEXT 36 Beam (w/4" flange – not the full precast option under development) as a superstructure option along with a NEBT 1000. The bridge is a 7-span continuous structure with 55-80-80-80-80-80-55 with integral abutments. The thinking for this project was that it was good-size and had enough beam lines to give fabricators and contractors an opportunity to consider the NEXT beam and the new form cost premiums. The project is moving into the 100% stage and is anticipated to be advertised this summer if the necessary permits can be obtained. Steve noted that he spoke with Rita during the design and issued draft plans/details to PCI for comment. According to Rita, the NEXT beam was primarily geared to compete with the butted box beams and not necessarily the NEBT 1000. Steve recommended that the consultants and Department look hard at this option themselves before going forward as a sole beam type. For Steve's particular project, the final design was more difficult for the NEXT beam to get reasonable zero final camber estimates so that the deck thickness did not vary a great deal. Concrete strengths needed to increase from 8 ksi to 9 ksi for the NEXT beam compared to the NEBT. In the final condition, only one line of beams was eliminated using the NEXT beam option. Steve noted that it would have been nice to have the ability to design the NEXT beam with a composite topping on the order of 5" thick rather than need a full 8" reinforced deck slab. Perhaps configuring a blockout to allow for the possibility of adding a diaphragm or two might allow for this as it would change the live load distribution and stiffness of the cross-section. Steve noted that MassHighway may be more willing to commit to this new shape and potential first costs on projects. Steve also noted that spread box beams with metal stay-in-place forms may be competitive in some situations should the Department consider using these forms and type of construction. Steve noted that the spread box beams and NEXT beam allows for a discrete haunch to be used for elevation adjustments based on variable camber/grade considerations – with butted construction, there is potentially more variability to be considered in the topping slab thickness. Steve

note that with the use of voided slabs (sometimes increased to 24” deep) up to 60 feet and the use of NEBT down to this range, the NEXT beam may have a limited span capacity to compete with other shapes. Steve noted that he was a somewhat skeptical of this shape being the best solution to many applications but urged others to review/consider for themselves.

- There was some discussion on the use of full depth precast sections and decks. Jeff Folsom noted this has been considered on past MaineDOT projects but there was significant concern about the ability to fully grout the haunches without leaving any voids. However, he noted the Department has used exodermic decks on a few projects.
- Wayne mentioned one of their new-hires had worked on some research projects at UNH that involved developing and testing full precast connections without grout. Perhaps some new details will be available in the near future.
- Tim turned the discussion to the previous topic of vehicular collision force on piers:
 - Tim handed out copies of selected portions of the Florida Structures Design Guide (Volume 1, Sections 2.6 and 3.11) and briefly highlighted some of their requirements and approaches to dealing with the 400 kip static loading. Steve provided the Department with a hard copy of some studies done in Florida and some sample calculations for pier loading.
 - Jeff Folsom noted he believed the latest AASHTO meeting had some language that would be added to the code to allow for some judgment on this loading, particularly with the railroad load.
 - The group discussed retaining walls and noted they may be exempt from the collision load as mentioned by FDOT.
 - A couple of projects were mentioned by the Department- a project in Etna that uses a T-Wall abutment with guardrail in front. The lower tiers of the T-wall are filled with concrete for that project to help resist the collision load.
 - Some discussion on MSE abutments/walls as well...likely okay in general without collision loading concerns based on redundancy of this type of structure – localized damage could probably be repaired.
- Types of corrosion resistant reinforcing steel were discussed. Tim provided some information from research reports available on-line. Most of these reports evaluated MMFX, SS Clad, Black, and Galvanized reinforcing steel.
 - Tim noted a study sponsored by South Dakota DOT comparing Clad, MMFX, and Black bar. The results of the study were discussed. Concern by group was how the study was completed (in lab or real case study). The group also briefly discussed the results of several additional research projects dealing with various types of corrosion resistant rebar. All of the

studies confirmed the benefit of utilizing corrosion resistant reinforcing steel. Copies of these reports can be found at the following links

- South Dakota Study:
http://www.state.sd.us/Applications/HR19ResearchProjects/Projects/SD2001_05_final_report.pdf
 - Iowa DOT study:
http://www.ctre.iastate.edu/reports/corrosion_resistant_steel.pdf
 - FHWA publication FHWA-HRT-07-039:
<http://www.fhwa.dot.gov/bridge/pubs/07039/07039.pdf>
 - Michigan DOT:
http://www.mi.gov/documents/mdot/MDOT_Research_Report_R1499_209781_7.pdf
 - Florida DOT:
<http://www.dot.state.fl.us/structures/ResearchProjects/mmfx%20report%20for%20web%20page.pdf>
 - Delaware Center for Transportation:
http://www.ce.udel.edu/dct/research/publications_files/Rpt.%20171%20%20FINAL%20MMFX%20Rebar%20Eval%20I95,%201-7-12-B.pdf
- Leanne noted that in the past, SS Clad rebar has not been manufactured in the US and that this is an issue with projects with Buy America provisions. Perhaps there are domestic fabricators now.
 - MaineDOT still discourages epoxy bar at this time but it is still used from time to time. The primary concern is damage to coating during handling and construction and the touch-up required or the touch-up that is neglected or missed.
 - At this time, alternative reinforcing materials are still considered on a project by project basis and on an application by application basis (deck, backwall, expansion joint locations, piers subject to salt splash, etc...) by the design team.
 - The design of structures with MMFX reinforcing steel was discussed:
 - There are some limits on where you can use these bars, as well as design stress limits for ductility, that need to be accounted for (top of slabs, lower design yield than material permits). This information was noted at a recent AASHTO T10 committee with some changes to the specifications suggested. It is unclear whether the proposed changes were adopted at the meeting. An outline of the T10 committee agenda, including the proposed changes, is available online (only pages 67-69 apply to this discussion):
<http://www.transportation.org/sites/bridges/docs/2008%20Ballot%20Items%2050-59.pdf>
 - Tim reached out to, and is waiting for some additional information from, the AASHTO T10 committee chair to share with the group. There are some considerations such as longer splices and other information that may be available.

➤ **Other Topics**

- At the next meeting, stay-in-place forms will be discussed in more detail.

Next Meeting

- **June 10, 2009 at 10:00 AM.**

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 within ten working days. 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