Minutes of Constructability Meeting for Little Silver Creek Bridge ABC Replacement

Meeting time: May 29, 2014 from 10:00 a.m. to 12:10 p.m.
Meeting place: Iowa DOT Central Complex, NW Wing 1st Floor Conference Room, 800 Lincoln Way, Ames, IA 50010
Attendees:
Michael Nop, Iowa DOT Bridge, 515-233-7935, Michael.Nop@dot.iowa.gov
Dean Bierwagen, Iowa DOT Bridge, 515-239-1174, Dean.Bierwagen@dot.iowa.gov
Ahmad Abu-Hawash, Iowa DOT Bridge, 515-239-1393, Ahmad.Abu-Hawash@dot.iowa.gov
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Wayne Sunday, Iowa DOT Construction and Materials, 515-239-1185, Wayne.Sunday@dot.iowa.gov
Jordan Muller, Peterson Contractors, Inc., 319-345-2713, jordan@petersoncontractors.com
Mark Freier, Godbersen-Smith Construction, 712-364-3388, m.freier@gs.const.com
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Dominique Corvez, Lafarge, 647-222-4711, Dominique.corvez@lafarge.com
Paul White, Lafarge, 773-329-6565, paul.white@lafarge.com
Scott Hanson, Iowa DOT Contracts, 515-239-1274, Scott.Hanson@dot.iowa.gov
Paul Sodahl, Iowa DOT Bridge, 515-233-7932, Paul.Sodahl@dot.iowa.gov

Opening remarks by Ahmad Abu-Hawash
Self-introductions by attendees
Powerpoint presentation by Curtis Carter
Powerpoint slides and 60% preliminary plan set can be made available by Iowa DOT Office of Contracts.

Remarks/Comments:
1.) Surface roughness of longitudinal and transverse modular deck joints
UHPC will likely only be used for longitudinal modular deck joints. Lab testing has shown that an exposed aggregate finish using a form retarder with pressure wash provides the best concrete surface finish for UHPC to bond with. Some felt that this finish could work well if the modular units were individually poured (which is unlikely), but casting the entire deck at once as was done for the Keg Creek ABC bridge would likely be problematic for this finish since the concrete may not stay green until the deck pour is complete and the forms are removed. Additionally removing forms while the concrete is green may tear up the edges of the deck concrete. A better way to go may simply be to specify an ICRI surface roughness on the plans and allow the contractor to choose exposed aggregate method, sandblasting, or a form-liner in order to achieve the roughness. There are ICRI roughness samples that can be used to visually determine if the requirement has been met. The DOT will require a proof of concept test (joint mockup) to determine if the contractor's method can achieve the texture requirement and also to evaluate the UHPC casting method. Longitudinal and transverse joint surfaces

will require the roughened, keyed surface, but it is not likely that the recessed keys of the longitudinal and transverse joints will be required to intersect.

2.) Pile bent piers

It was discussed that bridge contractors in Iowa do not have much experience with the proposed large HP16 piling, although these piles are becoming more common in other states and in other segments of the construction industry. Contractor should have enough lead time to procure HP16 steel piling since the bridge will be let in the fall of 2014 and pile driving will not take place until late summer/early fall of 2015. Pile lengths could be on the order of 120' or more and qualified field welders will be required for pile splices. The DOT will allow the piles to be cutoff when capacity is reached, it will not be necessary to drive to refusal. The DOT will likely allow the contractor the option of placing concrete pile encasements after the road is open to traffic. The contractor will be responsible for stability of the pile bent piers during construction. A precast pier cap and CIP pier cap option will likely be included in the plans.

3.) Integral abutments

Three options for constructing integral abutments were presented. The first two options were more traditional in that they involve either a precast or CIP abutment footing cap followed by the placement of a CIP abutment diaphragm/backwall. The third option involved setting the modular units directly on the piling and then forming and pouring the entire abutment at once. There was some consensus that the third option though feasible may not be selected since there is greater risk in making sure the piles are placed accurately. Additionally any schedule savings that could be achieved with the third option may not be of benefit since the construction of the piers will likely dictate the timing for the placement of the modular units. The third option may be removed from consideration. There appears to be no reason to offer a precast wing option since the wings can be poured at the same time as the diaphragm/backwall, and it was noted that the precast wing detail used for the Keg Creek project was generally difficult to construct.

4.) Pier diaphragms and transverse pier deck joints

The DOT presented the concept of using a 10' wide transverse deck joint that would be poured in concert with a full depth pier diaphragm using normal concrete. The transverse joint is intended to provide span continuity for live load. Placing deck formwork at the transverse joint with the longitudinal slab bars protruding from the modular units was not seen as a significant issue. Curing time for the concrete in the transverse joints could possibly be an issue if the DOT requires a minimum number of days before traffic (including ready mix trucks for rail slip form machines) are allowed on the deck. The DOT will review the scheduling implications of the specified wet cure period and will consider allowing construction traffic to drive over the wet cure burlap and sheeting. Some discussion was presented concerning the optimal application of UHPC at and near the transverse deck joint. Some concern was expressed with using UHPC only for the longitudinal deck joints and not for the transverse joint since there may be an increased chance of deck cracking at the interface between the longitudinal/transverse joint interface under the current proposal. Meeting attendees asked about alternate transverse joint concepts, including a narrower UHPC joint, a UHPC link slab, and a sealed joint option. The DOT will review the possible options for the transverse deck joint.

5.) Miscellaneous items

- The maturity method for attaining concrete strength will be permitted. The DOT intends to permit loading of components after the concrete has demonstrated that design strength is achieved. Achievement of design strength does not necessarily mean that the specified cure has been achieved, and additional measures may still be necessary to meet the curing requirements.

- Contractor will be responsible for survey and the independent survey check.
- A pre-bid meeting is planned.
- There will likely be an Incentive/Disincentive contract option.
- The anticipated closure window will be during a drier part of the year. The DOT will review the schedule provisions as related to inclement weather.
- Any questions regarding this project will be passed through the AGC.

6.) Overall feedback
The structure as proposed at the meeting is constructible.
There was some concern that a 21 day schedule is too tight particularly regarding weather concerns over the 3 week period.