MINUTES OF DOT-AGC BRIDGE DESIGN SUBCOMMITTEE MEETING

(Approved: 12/9/09)

The DOT-AGC Joint Bridge Design Subcommittee met on October 14th, 2009. Those in attendance were:

Berry Jenkins	Manager of Highway Heavy Division, Carolinas Branch AGC (Co-Chairman)
Greg Perfetti	State Bridge Design Engineer (Co-Chairman)
Mike Robinson	State Bridge Construction Engineer
George White	Blythe Construction, Inc.
Randall Gattis	Sanford Contractors, Inc.
John Herrin	Taylor & Murphy Construction Co.
Larry Cagle	Thompson-Arthur APAC
Erik Frazier	S.T. Wooten Corp.
Lee Bradley	Dellinger, Inc.
Brian Hanks	Structure Design Project Engineer
Paul Lambert	Structure Design Project Engineer
Scott Hidden	Support Services Supervisor – Geotech. Eng. Unit
Chris Kreider	Regional Operations Engineer – Geotech. Eng. Unit
Gichuru Muchane	Structure Design Engineer
David Stark	Structure Design Engineer
James Gaither	Structure Design Engineer

During the review of the June 10th, 2009 meeting minutes, the following items were discussed:

1. *Temporary Detour Bridges*

   Contractors stated that it would be desirable for the proposal to contain a comprehensive summary of restrictions for temporary detour structures. It was noted that permit conditions are often scattered within the "green sheets." As such, they requested a single sheet summary/interpretation of the permit conditions. They also requested additional information be included in the plans. Information such as fill limits, dimensions to toe-of-fill, coordinates of environmentally sensitive areas, and plan notes when bents are not permitted in the water was discussed.

   Mr. Perfetti noted that for consistency and accuracy, the Department prefers not to repeat information in multiple places in the plans, whenever possible. The Department committed to determining how to make a "no temporary bents in water" criterion more visible.

2. *Elastomeric Concrete*

   Mr. Robinson stated that the anticipated effective date for the revised special provision for *Elastomeric Concrete* is April, 2010. He added that letters requesting elastomeric concrete samples for preapproval have been sent to elastomeric concrete producers. He stated that only elastomeric concrete that has been prequalified for use will be allowed.

The minutes of the June 10th, 2009 meeting were approved.

The following items of new business were discussed:

1. *Drilled Pier Pay Items*

   Mr. Hidden stated that the Geotechnical Engineering Unit has completed a study of historical data on the drilled pier pay items. The overall average showed that there is very little cost over-run. However, closer examination of the data indicated that a significant number of drilled piers not in soil

had either a substantial cost over-run or under-run. As such, the Department is considering alternate pay methods for drilled piers.

Mr. Robinson stated the Department will be meeting separately with the drilled pier contractors to discuss the alternate payment proposals. He inquired if the method of payment for drilled piers makes a difference to Contractors. Contractors stated that it did not make a difference to them, but they requested the approximate drilled pier quantities continue to be shown on the plans, and Contractors remain responsible for drilled piers above the ground.

Mr. Robinson stated that he would provide an update at the next meeting.

2. *DBE Sub-Contracts*

Mr. Robinson stated that projects funded by the American Recovery and Reinvestment Act (ARRA), commonly known as stimulus funds, are subject to auditing for disadvantaged business enterprise (DBE) participation. He stated that invoices must show the DBE.

Contractors inquired if the Department provides Contractor-DBE mediation and they asked about process for replacing a DBE. Mr. Robinson responded that the Department does not mediate between Contractors and Sub-Contractors, and that Contractors may replace a DBE, as long as they have documentation to support the need to replace the DBE.

3. *Rebar in Modified Bulb-Tee Girders*

Mr. Bradley noted that the modified bulb-tee girder top flange reinforcing that projects into the deck with no bend is a safety concern. He asked if an extra bend could be detailed in the bar to address the safety concern.

The discussion noted that the dowel bars in sidewalks also pose a similar safety concern. Mr. Hanks stated that Structure Design will investigate the feasibility of detailing an extra bend in the bar for girders and 'U' shaped dowel bars for sidewalks.

4. *Transverse Joints at Integral Abutments*

Mr. Bradley asked if the transverse construction joint on the trailing end of a deck pour is necessary, on single span integral abutment bridges.

Mr. Hanks and Mr. Robinson responded that the transverse joint is intended to mitigate cracks, especially on skewed bridges. If the transverse joint is omitted, the heat of hydration differential between the end diaphragm and the deck slab may also induce cracking. As such, eliminating the transverse joint in the deck was not recommended.

5. *Closure Pours*

Mr. Lambert distributed a draft revision of the project special provision for *Falsework and Formwork,* with verbiage addressing screed supports for staged construction. The Construction Unit had asked last year to have the Stage II falsework independent of Stage I deck.

He gave a brief presentation on typical staged construction details employed by Contactors to form the overhangs at each stage and the closure pour. He noted that the staging bay typically has been 4'-0" girder spacing, resulting in a 2'-0" closure pour width. This spacing in the past usually resulted in Stage II falsework in this bay being connected to Stage I deck. Subsequent submittals approved supporting the screed rail for Stage II pour directly above the girder adjacent to the closure pour. However, the soffit of the Stage II overhang was still supported at the far end by the Stage I deck. The Construction Unit pointed out that this still did not solve the problem they were experiencing of the Stage II deck edge being higher than the Stage I edge. Construction requested that Stage II falsework be completely independent of Stage I. Structure Design agreed to require this.

Mr. Lambert added that a couple of recent projects used 7'-0" girder spacing and 4'-0" closure bay. If this became a trend, then the use of standard horizontal leg length overhang brackets could be employed on Stage II adjacent to the closure pour. He requested Contractor feedback whether this would be of benefit or if there would be any reservations to the use of wider bays. Discussion noted that Stage II removal of the falsework and formwork would be more time consuming and that diaphragms would be required in the wider bay. It was noted that concrete girder bridges typically exhibit minimal deck pour deflections.

6. *LRFD Piles*

Mr. Bradely asked whether there was a benefit to higher tonnage piles on load and resistance factor design (LRFD) bridge projects, as there has not been a reduction in the number of piles used. He noted that driving the higher tonnage piles requires more expensive higher tonnage cranes.

Mr. Hidden responded that LRFD piles have a higher reliability (effective factor of safety) requirement and LRFD loads are greater than those required by previous design specifications. The discussion noted that the increased pile tonnages have allowed the Department to use pipe piles or concrete piles in soil conditions that would have previously required drilled shafts. Contractors acknowledged that most of their concerns were in regards to pipe piles and concrete piles, not H-piles.

Contractors also inquired if the Department would provide guidance on crane size and type when making capital investments in cranes.

Mr. Hidden and Mr. Kreider responded that a review of historical hammer submittals showed that the hammer had sufficient energy ranges to drive LRFD piles.

7. *Intermediate Steel Diaphragms for Modified Bulb-Tee Girders*

Mr. White inquired if there were any plans to begin using standardized steel diaphragms on modified bulb-tee girder bridges.

Mr. Hanks responded that development of standard steel diaphragm details for modified bulb-tee girders is near completion, and will be released soon.

8. *Alternate End Diaphragms for Concrete Girders*

Mr. White inquired if the Department would consider proposals on alternate end diaphragm details, similar to those used on steel girder bridges.

Mr. Robinson responded that the Department welcomes and considers Contractor proposals for alternate construction methods and details.

9. *Contractor Designed Pile Panel Walls*

Mr. White stated that recent contracts were lacking with regard to right-of-way, access agreements, and soil borings, and asked why the Department was not providing wall designs.

Mr. Hidden responded that the Department transitioned to the Contractor designed walls to streamline the wall design process and establish a uniform payment method. He noted that Contractors were in a better position to obtain site specific conditions, such as topographic data, wall elevations, and subsurface conditions. He added that other information and data, such as right-of-way limits, are typically shown in the Roadway sheets within the contract plans.

10. *Next Meeting*

The next meeting is scheduled for Wednesday, December 9th, 2009 in Structure Design Conference Room C.