

## MINUTES OF DOT-AGC BRIDGE DESIGN SUBCOMMITTEE MEETING

(Approved: 8/10/11)

The DOT-AGC Joint Bridge Design Subcommittee met on June 8<sup>th</sup>, 2011. Those in attendance were:

Greg Perfetti	State Bridge Design Engineer (Co-Chairman)
Mike Robinson	State Bridge Construction Engineer
Dan Holderman	State Bridge Management Engineer
Chris Peoples	State Materials Engineer
Ron Hancock	State Construction Engineer
Allen Raynor	Assistant State Bridge Design Engineer
Randall Gattis	Sanford Contractors, Inc.
Chris Britton	Taylor & Murphy Construction Co.
Larry Cagle	Thompson-Arthur Div., APAC-Atlantic, Inc.
Dan Nickel	Carolina Bridge Company
Erick Frazier	S.T. Wooten Corp.
William Arent	Carolinas Ready Mixed Concrete Association
Brian Hanks	Structure Design Project Engineer
David Stark	Structure Design Engineer
Scott Hidden	Support Services Supervisor – Geotech. Eng. Unit
Owen Cordle	Physical Testing Engineer – Materials and Tests Unit
Gichuru Muchane	Structure Design Engineer

The minutes of the April 13, 2010 meeting were reviewed and approved.

The following items of new business were discussed:

### *1. Standard Concrete Mix Designs*

Mr. Peoples stated that a Contractor had inquired if it was possible to develop a standard concrete mix design that would be suitable for any project, similar to the practice for asphalt mix design. Mr. Cordle addressed this inquiry by explaining the differences between concrete and asphalt mix designs. He noted that the performance of concrete is dependent on the constituent materials mix proportions and a number of additional factors, which include the type and source of aggregates, cement, and mineral and chemical admixtures. He added that there are also considerations for the type of application for the concrete.

Mr. Cordle also described the process for obtaining approval for a concrete mix design, and he distributed Form 312U for submitting a concrete mix design for approval. Each approved mix is assigned a unique code and is stored in the Department's HiCAMS database. Mr. Cordle encouraged Contractors to use Form 312R, which he distributed, to request use of approved mix designs. He noted that Form 312R allows the Contractor to request multiple mix designs, on a single sheet per plant, by listing the concrete producer's mix design number for each desired mix.

Mr. Peoples solicited suggestions for improving the mix design approval and assignment process, and he inquired if Contractors are willing to assume some of responsibilities for ensuring appropriate mix designs are utilized.

During the discussion, Contractors stated that they now had a better understanding and did not see any need to change the current process. They suggested the Department inform more Contractors that Form 312R is designed to request use of approved mixes and facilitates multiple approved mixes on one sheet. Mr. Peoples responded by stating that Materials and Tests would make an effort to promote the form.

## 2. *Structure Drainage Details*

Mr. Gattis initiated a general discussion on the construction of and costs associated with drainage systems on bridges. He stated that the fittings and hardware used to support the system are costly and he noted the difficulties involved when placing the main collection trunk line through the end bent backwall and bridge approach fill. For drainage pipes which pass through the approach fill, he suggested using a stone approach fill to facilitate adequate compaction around the pipe or, alternatively, reroute the drainage pipe around the end bent. Mr. Gattis also suggested the plans specify the material for filling the annular void in the backwall. Contractors agreed that the drainage systems were expensive and difficult to install.

Mr. Stark stated that the Construction Unit had reported performance problems with some of the structure drainage systems, especially during the harsher than usual winter conditions experienced in some parts of the State over the last few years. As a result, Structure Design performed a comprehensive evaluation of the drainage system. To address the performance issues, it was necessary to detail additional expansion joints and support hardware. The improvements added significant costs to the drainage systems, which prompted an assessment of the cost effectiveness of structure drainage systems vis-à-vis widening the bridge deck. Mr. Stark presented an overview of the assessment process and findings, which showed that in most cases it is cost effective to widen the bridge deck in lieu of detailing a drainage system. Mr. Muchane added that Structure Design has been advising in-house Engineers to coordinate with the Hydraulics Unit to widen the bridge deck by up to two feet before considering the drainage system option.

## 3. *Other*

### i. Certification of Precast Concrete Producers

Mr. Peoples distributed a copy of a letter that was sent out to producers of precast concrete products to notify them that the Department will begin requiring third party certification from either the National Precast Concrete Association (NPCA), the American Concrete Pipe Association (ACPA) or the Prestressed Concrete Institute (PCI). He noted that the Department will phase out routine inspections of concrete plants, but will continue random inspection of plants and will provide special inspection of items not covered by one of the third party certification programs.

During the discussion Contractors inquired if they would need certification if they opted to produce precast concrete products for their projects in lieu of procuring them from third party producers.

Mr. Peoples responded by noting that Section 1077 of the *Standard Specifications* requires use of precast units from sources participating in the Department's quality control/quality assurance program. As such, Contractors who opt to produce precast concrete products used on Department projects would have to be certified.

### ii. Pile Driving

Mr. Frazier discussed payment for re-driving piles which require a Pile Driving Analyzer (PDA). He noted that in some cases the waiting period for pile-set requires re-driving the pile on the following day. Consequently, Contractors incur additional costs to have the PDA Technician available for an additional day.

Mr. Hidden responded by stating that measurement and payment for piles underwent a comprehensive review, which resulted in a revised special provision for piles, which has been included in the draft 2012 *Standard Specifications*. He noted that in most cases pile-set can be achieved within 4 hours, and suggested Contractors schedule pile driving so the PDA Technician

can complete the PDA in one day. Alternatively, he suggested Contractors can build the risk into the bid.

iii. Work Zone Traffic Control Supervisor

Mr. Cagle stated that Contractors are now required to have a trained Work Zone Supervisor. He inquired whether the designated Work Zone Supervisor is required to be present on the project site at all times.

Mr. Hancock responded by noting that only one trained Work Zone Traffic Control Supervisor is required per company to oversee Work Zone Traffic Control operations and installations inside the highway right-of-way.

iv. Bridge Management Projects

Mr. Holderman informed Contractors that the State Budget recently passed by the State General Assembly will provide approximately \$400 million for system preservation over the next two years. He noted that the funds will be under contract within this two year period.

4. *Next Meeting*

The next meeting is scheduled for Wednesday, August 10, 2011 in the Structure Design Conference Room.