

# **Georgia/Carolinas PCEF Committee Meeting #24**

GDOT, Atlanta, GA

February 6, 2020

## **MINUTES**

### **1. Welcome & Introductions**

At 10:25 AM, Committee co-chair Reid Castrodale began the meeting by welcoming attendees and those attending remotely via GoToMeeting. The start of the meeting was delayed because of technical difficulties in getting the remote callers connected. Co-chair Romeo Garcia participated remotely for this meeting. Self-introductions were made by attendees and those joining remotely. A sign in sheet was circulated.

### **2. Review & Approval of Minutes – August 15, 2019 Meeting at SCDOT**

A motion was made and seconded to approve the minutes as distributed. Passed.

### **3. Review of Agenda**

The agenda for the meeting was reviewed. Handout items were distributed in advance of the meeting. No presentations were lined up for this meeting.

Reid Castrodale discussed the need to renew the listing of participants for each action item. He also indicated a renewed intent to get the minutes out in a timely manner. Some topics that are of interest to producers were reviewed, including the increased use of longer girders, lateral stability, possibly strut-and-tie model; materials topics include flowable concrete/SCC, UHPC, concrete repair.

Richard Potts indicated that the Tampa plant has been doing work with UHPC, including H-piles, related to the current PCI UHPC research project. It was noted that current UHPC applications include connections and overlays; use for major elements will still be delayed until research and design specifications can be completed. Romeo also indicated that FHWA remains interested in UHPC, noting that several applications of the material have been proposed for EDC-6. He expects a lot of activity related to UHPC in EDC-6, which will start in Fall 2020. These applications include deck joint replacement and link slabs. Jon Smith asked if UHPC was being proposed for use with repairs, which it is. Bill DuVall asked if the UHPC pile research efforts are moving forward. Richard Potts offered to get some information from FDOT which is doing the work.

The meeting agenda, minutes, and any other related documents will be posted on the G/C PCEF webpage on the G/C PCI website at: <http://www.gcpci.org/index.cfm/technical/pcef>.

### **4. Informational – Updates from FHWA, GDOT, SCDOT, NCDOT, PCI & G/C PCI**

Each agency and organization attending gave a brief update:

**GDOT** – Bill DuVall gave a report on the lettings for the next 12 months – 123 projects with value of about \$550M. One design/build project has been awarded which is SR 135 over the Altamaha River, which is about 2500 ft long with approximately 128 ft spans using PS girders. They may have some other design/build projects coming out in June, and also the I-85 widening. However, as design/builds, construction will not start for some time.

They are developing ABC concepts and guidelines, and have an engineer working on UHPC. So they are interested in looking at new opportunities. He mentioned that ALDOT is doing a NEXT D bridge with UHPC joints and hope to learn from the project. They also tried to follow a similar project with DelDOT.

He reported that the I-20 bridge over the Savannah River project is moving forward. The MMIP projects are also moving forward and will keep them busy until about 2030.

**SCDOT** – Hongfen Li reported that procurement for the Bridge Design Manual should be out soon. A design memo was sent out before the new year on MASH barriers. A market research RFP has been sent out to inform development of the joints and details updating project, which will include boxes and FIBs. They are also working on 2 design memos to update their practice to the 8<sup>th</sup> edition of the *AASHTO LRFD Bridge Design Specifications*. Design memos will also be developed to address seismic design and cored slab designs. They intend to restrict cored slabs from being used for curved alignments.

SCDOT has a project where it was discovered that a new bridge had been under-designed by a consultant by mistake. The Department is considering replacement of the superstructure.

The Department is testing and considering the use of spray-on water proofing for cored slabs. This is to address concerns about water getting into cored slabs with asphalt overlays.

**NCDOT** – Trey Carrol reported that NCDOT is still watching their cash balance, so project lettings have decreased quite a bit. They will be letting 40 to 50 smaller projects between now and July as part of the BUILD grants since they are not affected by the cash balance. Harkers Island will be let in April, which is the only big project on the horizon. It is 3200 ft long with 28 spans and is a demonstration project for carbon fiber strand and glass fiber reinforcement. The only black steel will be in the barriers. Due to the high cost of the carbon strand, the Department is allowing pre-payment (early reimbursement) of up to 95% of the cost of the strand.

Cabell Garbee reported that they have some movement on filling state positions including filling Todd Whittington's prior position and inspectors. They are still working on the high flow concrete specification – will probably discuss further at the NCDOT-PCI joint committee meeting in March.

**FHWA** – Romeo Garcia gave a brief FHWA update.

Bridge bundling is the most significant item which was part of FHWA's EveryDay Counts-5. The Bridge Bundling Guidebook has also been completed. Implementation activities are getting underway with webinars, peer exchanges, etc. Romeo will let us know when activities begin.

A pilot for the NHI Bridge Construction Inspection Course is scheduled for May. The totally new course will have two parts: a web-based course that is a pre-requisite for a week-long instructor-led course. The course focuses on field construction so does not address fabrication of prestressed girders.

Work is now underway for the state of the practice report for the design, fabrication, and installation of partial depth precast prestressed concrete deck panels. The system is old technology but has been underutilized in most states so there is an opportunity to increase utilization. They plan to highlight successful practices and document concerns. Emerging concepts using UHPC will also be discussed.

Romeo asked for comments from the DOTs regarding the use of partial depth precast/prestressed concrete panels.

Lyn Clements indicated that she has heard good reports on the performance of the panels from Bridge Maintenance. However, there are some issues reported when foam was used to support the panels. They also have some concerns when bridges with panels are widened. Some different support details had been used. She was not sure why the use of the system had stopped but did not think that there had been a design memo. It was noted that metal decks and installation of deck reinforcement are often used to satisfy DBE requirements which can lead to resistance to changes in current practice.

Richard Potts reported that cracks can occur at the strands at the ends of panels. This can be an issue with development length of the strand, if pull-in of the strands is seen. Therefore, rejection criteria are needed. He also mentioned that care must be taken when storing panels. Finally, he recommended use of plastic shim stacks under panels rather than foam, especially for large panels. He thinks that use of the panels was discontinued in the early 1990s, although they had been used for a few design/build projects.

Hongfen Li reported that SCDOT had used deck panels until the 1990s when a design memo was issued to stop their use. They plan to reconsider their use, especially for spread boxes, with the work on their new Bridge Design Manual.

Trey Carrol reported that NCDOT was still using concrete panels in corrosive areas and are not having any problems. They still have standard details, or contract drawings have the details. He was not sure if the panels were still addressed in the Standard Specifications.

**PCI & G/C PCI** – Reid Castrodale provided a brief discussion of PCI activities.

Comments received from William Nickas regarding the UHPC research project. The Phase I work on the mix design process has been completed and will be published soon. This is applied research, using local materials and non-proprietary UHPC mixes, with targeted mix around 1800 psi. More suppliers of UHPC are entering the market and the definitions for the material are also being considered.

Some new eLearning modules are coming out. The existing design examples in Chapter 9 of the *Bridge Design Manual* are being revised because of the reorganization of Section 5 of the LRFD Specs, and a 200 ft long FIB with normal weight concrete and a 200 ft long WSDOT section with lightweight concrete have been added. The chapter is now under review. The revised chapter on losses is also under way. Developments of the lateral stability spreadsheet continues, so its release should be in early 2020. Chapters 1 and 2 of the bridge repair manual are now under review by the bridge committees, which includes updates and a few new topics.

G/C PCI Bridge Committee updates: Richard Potts has served as the chair of that committee for a number of years. He is moving into the G/C PCI Executive Committee, and as Jeff White is moving off of the Executive Committee, he will be taking over as chair of the Bridge Committee.

G/C PCI is looking at a Bridge Design Seminar for NCDOT in 2020, probably in November. Discussions about the seminar will begin at the next joint committee meeting with NCDOT in March. G/C PCI is looking to present a Prestressed Concrete Bridge Design Seminar in each state every other year. An inspectors workshop for GDOT is also being planned, similar to the one presented at NCDOT in 2019.

## 5. Materials, Fabrication and Construction

### 5.a Accelerated Construction ..... *Informational Item*

*Lead:* ..... *William Nickas, Reid Castrodale*

Hongfen Li indicated that SCDOT is very interested in ABC technologies. They have a chapter in their new design manual on ABC which should address related design and construction issues. They are working to educate themselves so they can move forward.

Since this topic is informational and there are no action items, a lead was not identified.

**Action item(s) completed:**

**New action item(s):**

### 5.b Reciprocity for Certifications and Other Issues ..... *Active Item*

*Lead:* *JR Parimuha* .....

JR Parimuha reported no new items or action on this topic. When new topics are identified, others will need to be identified to assist. Please let JR know if there are topics of interest in this area.

**Action item(s) completed:**

**New action item(s):**

### 5.c Tolerances ..... *Active Item*

*Lead:* .....

Richard Potts mentioned that the PCI tolerance committee is considering using a percentage of the design camber for the camber tolerance rather than a fraction of the girder length. JR Parimuha asked whether the new requirements will apply to box beams, which seem to have lower cambers than predicted.

**Action item(s) completed:**

**New action item(s):**

- Provide new PCI camber tolerance for girders

Reid Castrodale

5.d SCC Requirements.....Active Item

*Lead:*

Cabell Garbee reported that they are about to make progress on the new specifications. He was not able to get the inspectors to the ACI SCC certification training in the fall, so they are planning to do it in the spring. They are talking to producers who are using the higher flow mixtures to run and record results of tests usually performed for SCC mixes. They hope to work on the specifications from this data. Ben Chola, the NCDOT concrete mix engineer, has been travelling to producers' sites to see how normal and high flow mixes are performing.

Hongfen Li mentioned that Caleb Gunter is the replacement for Ali Hussein as the SCDOT structural materials engineer. He was previously the steel materials engineer.

There are several action items. Need to get materials engineers from prestress producers to help tackle these issues. Richard Potts put forward Dale Wilhite to take on these action items.

**Action item(s) completed:**

**New action item(s):**

**6. Parameters and Standardization**

6.a Precast Pavements [approach slabs]..... Informational Item

*Lead:*

No discussion.

**Action item(s) completed:**

**New action item(s):**

6.b Full-Depth Bridge Slabs.....Informational Item

*Lead:*..... Bill DuVall

No discussion.

**Action item(s) completed:**

**New action item(s):**

**Break for Lunch**

6.c Process Standardization..... Various

*Lead:* Jeff White

The following issues were discussed.

6.c.1 RFID/Bar codes for precast products..... Informational Item

Cabell Garbee reported that NCDOT is planning to get the portal completed using in-house staff. Peter Finsen mentioned that Idencia had dropped their associate membership in G/C PCI.

Jeff White reported that they are not having the best experience with the interface. They are pleased to hear that there is potential for competition coming for service suppliers.

JR Parimuha mentioned that things are running pretty smoothly for them.

Cabel reported that some other states are using the system for different products. Several states are using it to track concrete cylinders. NCDOT has talked to about 20 other states about the system, but the main issue is to get the different systems to interface properly.

**Action item(s) completed:**

**New action item(s):**

6.c.2 Full-Length Debonding of Strands ..... Active Item

Reid Castrodale discussed that one of the action items has actually been completed by the fact that all three states have had a design seminar in which the calculations on full-length debonding are presented. Both items should be posted and discussed at the DOT joint meetings.

Terry Koon mentioned that they have one project in which they are allowing full-length debonding. JR mentioned that the project documents include a note requiring the debonded strand to be removed from the member after detensioning. Hongfen Li asked if that was necessary, to which JR responded that typically the ends of the fully debonded strands are sealed the same way as for other strands, and that the strand is left in the girder. The note also required that after removal, the hole would be fully grouted. JR indicated that this would be virtually impossible to do successfully and there would be no benefit to remove it. Terry Koon said that they may reconsider the note and possibly change later since the plans are being finished up.

It was agreed that this item can be removed from this agenda and discussed at the DOT joint meetings.

**Action item(s) completed:**

**New action item(s):**

6.d Strand and Reinforcement Details ..... Active Item

Lead: Richard Potts ..... Reid Castrodale

6.d.1 Stirrup Projections

Reid Castrodale discussed that all of these items need to be addressed by industry by developing proposals. These will be developed as the industry begins to work on the topics outside the meetings.

6.d.2 Top Strand Debonding

No discussion.

6.d.3 Supplementary Stirrup Bars

Details exist, but no testing is known.

Strand Templates for FIBs

Richard Potts reported that GDOT is using the FDOT template; NCDOT and SCDOT are using templates with 2 strands in the web. However, he has recently seen a different template being used in a GDOT project. Lyn Clements asked that he let her know and she will see what she can do to change it. They are requiring designs to conform to FDOT details. [A topic for discussion with DOTs in joint committee meetings – not to be added to future agendas.]

6.e Girder Shapes ..... Active

Lead: Reid Castrodale .....

6.e.1 Lateral Stability ..... Active Item

Reid Castrodale indicated that this topic has been discussed in meetings, information has been provided, and WSDOT has shared their approach with the group. Reid proposed that the group consider a workshop (i.e., a working meeting) at which the information would again be reviewed, and examples of implementation be discussed to enable the Departments to make progress in their own implementation strategies. This would be intended to address development of policy rather than training designers in how to design for lateral stability. Information would then be transferred to designers during design seminars. SCDOT would be interested in taking an opportunity to focus on the topic to make decisions. NCDOT has done some work but needs to settle on policy. The meeting could be done in conjunction with or instead of the summer PCEF meeting.

The Departments were interested in such a meeting. Reid Castrodale agreed to develop a proposed agenda to give an idea of how much time would be required. This will be discussed further at the DOT joint meetings.

**New action item(s):**

- *Propose agenda for workshop on lateral stability design approaches* *Reid Castrodale*

6.e.2 FIBs..... *Active Item*

Terry Koon mentioned that they are seeing some variation in FIB details in design/build, but also design-bid-build projects. They expect that this can be eliminated when the Department develops their new girder standards. As they develop their standards, they will ask input from industry.

Lyn Clements mentioned that they also need to develop a FIB standard, although it will follow the FDOT details.

6.f Precast Substructure Elements ..... *Informational*

*Lead: ..... JR Parimuha*

**Precast pile caps**

GDOT uses precast caps for maintenance bridges. JR Parimuha said that they have seen some precast caps, including some private jobs. They have used the NCDOT standards, which has been helpful.

Steve Nanney mentioned that precast caps were included in one recent project, but the contractor requested that they be allowed to use conventional construction. The Department did require them to use the precast caps for one of the bridges in the package. It appears that a part of the issue is that the contractors don't like to be limited on placement of piles which is necessary for precast caps.

Lyn Clements agreed that contractors in GA also do not like to drive within tolerances.

**Precast substructures**

No discussion.

**7. New Business/Informational Items**

**Topics related to corrosion**

Hongfen Li asked a question from their review team regarding whether there was any guidance for concrete requirements for precast culverts in brackish water to prevent corrosion. The producers do not manufacture precast culverts – it is an NPCA product. Peter Finsen provided a contact at Tindall in Spartanburg.

Terry Koon also asked about how to deal with cored slabs exposed to salt or brackish water. Are there any special considerations? GDOT used stainless steel strands for piling. Research reports are available. We can discuss in DOT joint meeting. Are there resources available from PCI or ACI? JR Parimuha suggested that use of calcium nitrite is the easiest, and they could modify the slab shape and possibly raise the strand pattern. JR also mentioned that the NCDOT detail has hold-down anchors that could be useful.

Trey Carrol reported that they have a research project underway that is evaluating the effectiveness of their corrosion protection policies that have been in place for 10 or 15 years. They have been adding calcium nitrite and for piles, they sometimes add fly ash. They will share the results with the group when completed.

### **Suggestions for presentations**

Peter Finsen asked for suggestions for presentations for future meetings.

**2020 PCI Convention and The Precast Show – March 3-7, 2020 – Fort Worth, TX (no NBC)**

**2020 PCI Fall Conference – Sept. 22-26, 2020 – Rosemont, IL**

**2021 PCI Convention, The Precast Show, & The National Bridge Conference – Feb. 23-27, 2021 – New Orleans, LA**

Peter Finsen explained that PCI tried holding the National Bridge Conference (NBC) in conjunction with the PCI Fall Conference/Committee Days. However, it was not successful, so the NBC will return to being held in conjunction with the PCI Convention and the Precast Show in 2021. Therefore, there will not be an NBC in 2020. The DOTs will be invited to send representatives to the NBC in 2021.

## **8. Develop/Review List of Action Items**

## **9. Evaluation of Committee Progress/Process**

It was suggested that we could consider having a focused topic for one meeting each year and a general meeting for the other meeting. This will be discussed further in DOT joint meetings.

## **10. Next Meeting Date & Location**

Thursday, August 13, 2020 (10 am – 4 pm) at SCDOT

Thursday, February 4, 2021 (10 am – 4 pm) at NCDOT

## **Adjourn**

The meeting was adjourned at 2:10 PM.

**ATTENDEES:** G/C PCEF Committee Meeting – February 6, 2020 at GDOT

<u>Attend in Person</u>	<u>Attend via Web</u>	<u>Name</u>	<u>Company</u>	<u>Phone</u>	<u>Email</u>
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<b><u>PCI</u></b>					
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<b><u>Guests:</u></b>					