

# Georgia/C Carolinas PCEF Committee Meeting #22

NCDOT, Raleigh, NC

February 7, 2019

## MINUTES

### 1. Welcome & Introductions

At 10:00 AM, Committee co-chair Reid Castrodale began the meeting by welcoming those present and attending remotely via GoToMeeting. Co-chair Romeo Garcia was participating remotely for this meeting. Self-introductions were made by attendees present and those joining remotely. A sign in sheet was circulated. Steve Gaston indicated that he would not be able to participate after lunch.

Dan Muller announced that he has taken the NC Division Bridge Engineer position with FHWA and would be starting on Feb. 19.

### 2. Review & Approval of Minutes – August 16, 2018 Meeting at SCDOT

A clarification was noted. A motion was made and seconded to approve the minutes as revised. Passed.

### 3. Review of Agenda

The agenda for the meeting was reviewed. Handout items have been posted on the G/C PCEF website in advance of the meeting. It was noted that two presentations have been lined up for the meeting.

The meeting agenda, minutes, presentations and other 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, SCDOT, GDOT, NCDOT, PCI & G/C PCI

Each agency and organization attending gave an update:

**NCDOT** – Gichuru Muchane reported that the Department has received a USDOT Build grant for \$23M for replacing load-posted bridges in rural or economically depressed areas of the state. They expect that most projects will be cored slabs and will be let in September 2020. Funding is expected to allow replacement of 19 bridges in addition to the normal program.

Gichuru reported that the Harkers Island Bridge is progressing, and they anticipate a July let date. Trey Carroll would have given the report but is out of town this week. Design is complete and plans should be completed in March. To eliminate corrosion, reinforcement will be glass fiber reinforcing bars in some locations and carbon fiber strands for prestressing girders and 24-in.-square PS piles. They would have to provide the quantities for material for the reinforcement. While Buy America provisions do not apply since the reinforcement is not steel, most of the materials will be produced in the US. There was also a question about whether the project schedule allows for what would seem to be additional lead times required for fabrication of the reinforcement. Richard Potts asked if stainless steel strand could be used for the project, but that is unlikely because the project is intended to be a demonstration for non-metallic reinforcement. The rail will probably use epoxy coated conventional steel to meet crash test requirements.

The Bonner Bridge is expected to open in mid-February. The Rodanthe Bridge is under construction with Coastal Precast Systems shipping to the project for about 2 months.

The new MASH crash test criteria for railing details will be required by January 2020. NCDOT's 2-bar metal rail is unique, so they are planning to get it tested. The Department is also participating in a pooled fund study directed at testing a bolt-on precast barrier system, and in another pooled fund study for the more standard barrier types.

**SCDOT** – Terry Koon reported that the NEXT D beam project is completed, and a research report should be completed in February. The decked AASHTO girder project is still in process as a new consultant is working to complete the plans.

Hongfen is the Policy Engineer and Ani Carrigan is the new Quality Assurance Engineer. The process is starting for updating the Bridge Design Manual which needs to be updated to the 8<sup>th</sup> edition of the LRFD Specifications. The current manual is based on the 6<sup>th</sup> edition. They may send out some design memos as stop gap while the new manual is being developed.

Reid Castrodale asked if any information was available on the Wando River Bridge where a tendon had failed. Terry reported that the issues were addressed by Maintenance, and he and his office had not been involved. No one from Maintenance was on the call to provide more information. At a future meeting, it might be useful to have someone from Maintenance come to the meeting to give information.

Steve Nanney reported that David Rister had moved within the Department to the construction manager for mega projects and his position has not been filled. There are currently four bridge construction engineers.

Terry Koon also reported that Maintenance is working on a new load rating manual that should be posted on their website in April which is expected to result in more consistent load ratings in the future. Mark Hunter is the new bridge maintenance engineer; Emily Berry is the load rating engineer; and Emily Markley is Bridge Preservation Engineer.

**GDOT** – Steve Gaston reported that the I-20 bridge at the Savannah River, which is a design/build project, has been let. He does not think that they have seen preliminary plans yet, but the design/build team is working.

They have seven bridge replacement projects still to let through the end of the fiscal year in June, including Rte. 132 over the Altamaha River in Jeff Davis County which may have 13000 LF of girders. In fiscal year 2020, which begins on July 1, they expect to let 39 bridge replacement projects for a total value of \$154 M. One of the projects is Rte. 53 over the Chattahoochee River that will be a design/build project so the team can select either steel or concrete. He also noted that they have received a photo from construction staff showing the first of the haunched spliced girders for the Islands Expressway Project near Savannah. The project will have 22000 LF of prestressed concrete beams. Richard Potts reported that the first half of the bridge should be completed in October at which time traffic will be switched to the new structure; piling for the project has stainless steel strand.

Steve reported that they are having some success with low impact bridge and local bridge projects.

Courtland Street is complete and open to traffic.

Richard Potts asked about the I-16 / I-95 interchange project. Steve reported that the project has two parts: the interchange which will be a turbine interchange with an increased number of bridges that are shorter and more geometrically friendly, most of which will be likely be prestressed concrete; and the reconstruction of I-16 from the interchange to Savannah.

Peter Finsen asked about the I-285 / GA 400 interchange. Steve reported that the bridge office has very limited involvement on the project. He knows that the project is active but does not know about the number of bridges or their current status. Projects of this type are managed through the Innovative Program Delivery office in the P3 division, which typically hires a general engineering consultant to oversee the design of the project. The project team is led by Ferrovial.

**FHWA** – Romeo Garcia gave a brief FHWA update. FHWA is currently updating their Bridge Construction Inspection Course that got underway in fall 2018. The totally new course will have two parts: a web-based course that is a pre-requisite for an instructor-led course that will be 40 hours. Both parts of the course will be piloted in the spring of 2020.

FHWA is also completing a Bridge Bundling Guidebook that has been delayed, but they hope to have it available in spring 2019. They are getting ready to put out an RFP for developing a guide for design, fabrication, and installation of partial depth precast concrete deck panels. The system has been around for many years, but they feel it is underutilized in most states so there is an opportunity to increase utilization.

**PCI & G/C PCI** – Reid Castrodale presented comments received from William Nickas who was unable to participate because he was teaching an NHI course. He sent his regrets and greetings to everyone. More elearning modules have been developed. The bridge geometry manual has also been approved. PCI has launched a major research initiative on UHPC with PCI contributing \$600M and the winning team contributing about \$900M, for a total of about \$1.5M to develop design concepts for both bridges and buildings that take full advantage of the properties of UHPC. Several prestressers in the region are involved with the project (Standard Concrete Products for bridges; Tindall and Metromont for buildings); NCSU is also involved. The team is led by Dr. Maher Tadros with econstruct. William emphasized that

Ben Graybeal with FHWA and a representative from Caltrans both sit on the advisory panel for the project, so there will be DOT input into the project.

Peter Finsen gave a report for G/C PCI. He mentioned that a list of meeting dates has been sent out for 2019. Dates need to be added for prestressed concrete bridge design seminars for Georgia and South Carolina. The PCI Convention is coming up but will not include the National Bridge Conference. The DOTs will be invited to attend the PCI Committee Days and Technical Conference featuring the National Bridge Conference which will be held September 25-28, 2019 in Rosemont, IL, which is very close to O'Hare Airport. Peter will send out invitations for four from each DOTs to attend the fall conference when the schedule is released.

**SCC Update Presentation by Paul Ramsburg – Sika**

Paul Ramsburg joined the meeting remotely and presented an update on self-consolidating concrete (SCC). The presentation began with definitions of SCC and flowable concrete. Paul noted that PCI will be requiring ACI SCC Testing Technician certification in the near future. PCI also has a Precast Concrete Mix Design Training Program that could be made available in the area. The current test methods for SCC were presented, followed by a series of questions that are often asked about SCC. The presentation has been posted on the G/C PCI webpage.

Paul agreed to assist in updating specifications for SCC. Reid Castrodale to work with Paul to identify items that need to be revised in the current specifications. Peter Finsen asked that Paul send the agenda for the PCI Mix Design Seminar. New action items are listed in Item 5.d.

**5. Materials, Fabrication and Construction**

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

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

Reid Castrodale mentioned that he has to drive over some temporary bridges where it seemed that slide-in construction could have been used. Gichuru Muchane indicated that NCDOT was sending two engineers to a demonstration of slide-in technology in Memphis the weekend following the meeting, so they are considering use of the technology.

A presentation on total precast bridge structures by Greg Gorman of PennStress was given after lunch. Notes on the presentation appear after the lunch break. The presentation has been posted on the G/C PCI website.

**Action item(s) completed:**

**New action item(s):**

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

Lead: *JR Parimuha* ..... *Bobby Rochester, Aly Hussein*

JR Parimuha reported that he had discussed the current chart with Bobby Rochester. No new items requiring action were identified.

**Action item(s) completed:**

**New action item(s):**

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

Lead: .....

Reid Castrodale mentioned that *ASPIRE* is planning a series of several articles on sweep that include some discussion of tolerances.

**Action item(s) completed:**

**New action item(s):**

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

*Lead:*

Reid Castrodale indicated that he would get with Paul Ramsburg to identify items that need to be revised regarding SCC. The checklist form that Paul discussed is posted on the G/C PCI website.

Cabell Garbee mentioned that Ben Chola, the NCDOT concrete mix design engineer, has encountered questions regarding high slump mixes that don't meet current specifications for either SCC or conventional mixes. He suggested that the topic should be considered by the NCDOT Technical Committee. A discussion is needed to address how such mixes should be handled and tested. There are four producers who are using this type of mix. Al Hussein indicated that they had been dealing with this type of mix for probably 10 years and have had no problems; he agreed that it would be helpful to address testing.

Reid Castrodale had contacted the PCI Concrete Material Technology Committee regarding their definition of SCC, which led to the invitation to Paul Ramsburg to give a presentation at this meeting [**Action Item Completed**]. This was also reported in the minutes of the previous meeting.

Paul Ramsburg sent the agenda for the PCI Mix Design Seminar by the end of the meeting. Peter communicated with Paul during the meeting and they were able to set a date of July 10, 2019, for the seminar to be held in Raleigh, NC [**Action Item Completed**].

**Action item(s) completed:**

- *Contact PCI Concrete Material Technology Committee regarding SCC definition* Reid Castrodale
- *Provide agenda for PCI Mix Design Seminar* Paul Ramsburg

**New action item(s):**

- *Identify items needing revision in current SCC specifications* Paul Ramsburg & Reid Castrodale
- *Provide agenda for PCI Mix Design Seminar* Paul Ramsburg

5.e Electronic Submittals ..... *Active Item*

*Lead: Jeff White*

Richard Potts reported that GDOT is transitioning to the use of electronic submittals. His plants are seeing an increase in the time for submittal approval on the GA 400 project which is averaging 60 days since there are so many involved in review. This is an issue beyond electronic submittals. Steve Gaston provided some discussion of the process, even though their office is not involved with the GA 400 project. He mentioned that the RFP typically includes language about the allowed review period, and if that requirement is not being met, Richard should talk to the project manager. Jeff White pointed out that his plant is able making electronic submittals to all states without issues, so the goal for this item has been achieved. He added that they are receiving submittals with electronic stamps. It is the process of handling the submittals that needs to be streamlined.

It was agreed that this item should be removed from future agendas.

**Action item(s) completed:**

**New action item(s):**

**Break for Lunch**

**Total Precast Bridge Structures Presentation by Greg Gorman – PennStress**

Greg Gorman with PennStress, a prestresser in Roaring Springs, PA, gave a presentation on ABC concepts being utilized successfully in PA to produce totally precast bridges. The presentation had been given earlier in the week at the Mid-Atlantic PCEF meeting. Concepts discussed included precast abutment blocks with precast footings, modular pre-decked units using steel or prestressed concrete beams that also included precast abutment elements, and precast abutment pieces, precast deck panels, and precast approach slabs. For the precast elements, they are detailed to emulate CIP designs by using grouted splice sleeve connectors between precast elements. Pieces are dry fit in their

plant to make sure that all pieces fit as intended. PennDOT has developed standards using these concepts. Several example projects were discussed. He also presented the benefits to contractors and the public.

UHPC is being used for connections between deck elements, while grout is used in connections between substructure elements, such as walls and footings. Gichuru Muchane indicated that they are open to using these types of concepts. Greg mentioned that it was helpful when similar bridge projects were bundled so the contractor and field staff can follow processes from one bridge to the next. He indicated that they typically take an original design with conventional CIP construction and then convert it to precast construction using emulative details and techniques. Therefore, the design is not changed. In some cases, PennDOT has designed projects using precast elements and systems.

SCDOT asked if these concepts had been used for seismic projects. Greg responded that none of the bridges shown were designed for seismic, but that if a bridge is designed for seismic, then emulation can still be used to convert it to precast. Reid Castrodale pointed out that grouted splice sleeve connectors are rated for seismic design.

The presentation has been posted on the G/C PCI website. Greg offered PDH credits through PCI for the presentation.

## 6. Parameters and Standardization

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

*Lead: Brian Hanks*

Reid Castrodale mentioned that *Concrete International* February 2019 issue has an article on precast pavements and approach slabs. Greg Gorman mentioned that they had been involved on a project where the contractor changed CIP approach slabs to precast.

Following the last meeting, Reid Castrodale searched the TxDOT website for standards for precast approach slabs but was unable to find any. This action item was therefore deleted from the list [**Action Item Completed**].

#### **Action item(s) completed:**

- *Share TxDOT details for precast approach slabs* *William Nickas*

#### **New action item(s):**

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

*Lead: Brian Hanks* ..... *Bill DuVall*

Reid Castrodale reported that two items related to this topic were posted on the G/C PCI website for this meeting. The first is a set of lifting calculations by Roger Becker at PCI that demonstrate how to determine whether prestressing may be required to handle a panel without cracking [**Action Item Completed**]. The other item is an article from the Winter 2019 issue of *ASPIRE* that discusses panel handling considerations.

#### **Action item(s) completed:**

- *Share calculations regarding critical panel size requiring prestress* *William Nickas*

#### **New action item(s):**

### 6.c Process Standardization ..... Various

*Lead: Jeff White*

The following issues were discussed.

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

Bobby Watkins, the NCDOT Materials and Products Tracking Engineer, came to the meeting to report that the RFID system is working well for precast and prestressed concrete products. They expect to have a new portal operational by the end of June which will allow producers to access their data. Inspectors will also be able to enter data directly using HiCAMS, which will reduce the time required for them to enter data. The new portal will work with either Idencia or Titan, and each supplier will access the system directly, rather than Titan currently having to go through Idencia. This will disconnect the program from using Idencia as the point of entry for data.

A memo will be sent out from HiCAMS that will give all the steps to access the portal. If producers are using Idencia, there will be no changes in their system.

Bobby distributed copies of a flyer that clarifies the significance of the product tag, primarily as a resource for Construction Unit inspectors. Some field staff apparently thought that the presence of a tag indicated the product had been accepted. However, that is not the case, since it is simply an identifier. The field staff can open the system and use the tag to identify the product and see whether it has been approved. Cabell agreed to send an electronic version of the flyer for distribution to those not present at the meeting [**Action Item Completed**]. The flyer describes the web lookup system which is a great mobile app that allows those outside the Department to look up the product and determine whether it has been approved.

Aly Hussein from SCDOT asked if training on the system could be available for his inspectors. Bobby said he would be glad to send information on that to Aly if he would contact him. His contact info is in the flyer. SCDOT is looking at such a system.

It was agreed that this item should continue to be included on the agenda for the next meeting.

**Action item(s) completed:**

- Provide electronic version of flyer about RFID tags for distribution Cabell Garbee

**New action item(s):**

- Provide electronic version of flyer about RFID tags for distribution Cabell Garbee

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

Reid Castrodale indicated that no progress has been made on developing a proposal for full length debonding.

**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

Richard Potts reported that he has gotten some input from other prestress plants to allow the development of a best practice document that can be presented to design engineers. JR Parimuha and Jeff White agreed that for their NCDOT projects for which stirrup projections vary, they simply stretch a string line for each projection and extend the stirrups to the line. This is possible because NCDOT stirrup details do not have a bottom leg on the stirrup.

6.d.2 Top Strand Debonding

Reid Castrodale indicated that no progress has been made on developing a proposal for top strand debonding.

**Action item(s) completed:**

**New action item(s):**

6.d.3 Supplementary Stirrup Bars

Reid Castrodale reported that details from TxDOT and MnDOT have been uploaded as examples. The MnDOT details are from their bridge manual. There is also an email with some answers to questions submitted to MnDOT. MnDOT was not aware of any research to support the use of these bars. G/C PCI will evaluate use of these bars as an option to be considered along with other details related to stirrup projections.

**Action item(s) completed:**

**New action item(s):**

6.e Girder Shapes ..... *Active*

*Lead: Reid Castrodale* ..... *Gary Shrieves*

Reid Castrodale mentioned that there are some shallow girder shapes that have been developed by IL DOT that have been described in an *ASPIRE* article. MnDOT has developed some other shallow sections as an alternate for steel rolled girders. An *ASPIRE* article on the MnDOT sections is anticipated for the Spring 2019 issue (now Summer 2019). The IL DOT article has been posted on the G/C PCI website.

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

Reid Castrodale reported that a copy of the maximum beam length table in the GDOT Bridge and Structures Design Manual has been posted on the G/C PCI website. A note accompanying the table indicates that if the maximum spans are exceeded for a project with an alternate bidding process, stability calculations must be submitted. Therefore, the maximum span lengths are not absolute. This also means that for spans below the maximums, lateral stability calculations are not required.

SCDOT does not have a similar table but does enforce the optional span-to-depth ratio limit in the LRFD Specifications (Art. 2.5.2.6.3), which is a requirement that effectively limits the span lengths. Terry Koon pointed out that they require girders made continuous to be designed to also work as simple spans, which is also an indirect limit on the girder span length. They are currently reviewing a 178 ft long FIB that has been proposed by a design build team, but the Department is still imposing the span-to-depth ratio limit, so the designers will have to use an 84 in. deep FIB for that span. He indicated that they may evaluate the continued use of the span-to-depth ratio limit when the Bridge Design Manual is revised.

The spreadsheet that implements the PCI Recommended Practice on Lateral Stability is expected to be available by the end of June 2019.

**Action item(s) completed:**

**New action item(s):**

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

Gichuru Muchane indicated that their FIB standards are still under development. Terry Koon reported that they have seen FIBs in projects from design/build teams, and the FIBs are being allowed. They are also satisfied that enough prestressers can fabricate FIBs so there is competition. With FIBs being used in design/build projects, SCDOT is also allowing them to be used on design-bid-build projects.

**Action item(s) completed:**

**New action item(s):**

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

*Lead: JR Parimuha*

**Precast pile caps**

No discussion.

**Action item(s) completed:**

**New action item(s):**

**Precast substructures**

There was a brief general discussion about large precast elements. Peter Finsen asked if there are still issues with getting permits for big girders. Jeff White said that they have not had any problems getting permits in NC since the ratings began to be done by the Permits Group within the Structures Management Unit. He mentioned that they also hadn't had problems with permits in SC, except that there are many load rated bridges that require loads to take longer routes.

**7. New Business/Informational Items**

No significant discussion.

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

The action item list from the last meeting was reviewed. Several items were identified as being completed. Industry plans to work on issues prior to the next meeting.

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

**10. Next Meeting Date & Location**

Thursday, August 15, 2019 (10 am – 4 pm) at SCDOT

Thursday, February 6, 2020 (10 am – 4 pm) at GDOT

**Adjourn**

The meeting was adjourned at 3:15 PM.



**ATTENDEES:** G/C PCEF Committee Meeting – February 7, 2019 at NCDOT

		<u>Name</u>	<u>Company</u>	<u>Phone</u>	<u>Email</u>
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