NCDOT - G/C PCI Joint Meeting Minutes

Wednesday, March 27, 2019; 10:30am

1. Cabell Garbee called meeting to order at about 10:40. He welcomed attendees. A sign-in sheet was distributed. Self-introductions were made. The meeting had been rescheduled because the meeting had somehow been dropped from the DOT calendar. Also, the DOT did not receive the email with the agenda and minutes from the prior meeting, although the G/C PCI members had received the same email.

   It was noted that Chris Peoples had taken a promotion to a new position as the Director of Field Support which is in the downtown office. This is the position that Greg Perfetti held until he retired. Chris's last day as State Materials Engineer was Friday, March 22. There may be some rearranging of units under the directors, but business is expected to continue as usual.

   After introductions, the meeting was turned over to Reid Castrodale who had prepared the agenda.

   The following attended the meeting.

Gichuru Muchane	NCDOT – SMU	gmuchane@ncdot.gov
Trey Carroll	NCDOT – SMU	thcarroll1@ncdot.gov
James Bolden, Jr.	NCDOT – SMU	jlbolden@ncdot.gov
Todd Whittington	NCDOT – MTU	twhittington@ncdot.gov
Cabell Garbee	NCDOT – MTU	cgarbee@ncdot.gov
Jason E. Poppe	NCDOT – MTU	jepoppe@ncdot.gov
Jason Civils	NCDOT – MTU	jcivils@ncdot.gov
Tim Brandenburg	NCDOT – MTU	trbrandenburg@ncdot.gov
Peter Finsen	G/C PCI	peter.finsen@gcpci.org
Richard Potts	Standard Concrete Products	rpotts@standardconcrete.org
Jeff White	Prestress of the Carolinas	jeff.white@prestressotc.com
Reid Castrodale	Castrodale Engineering / G/C PCI	reid.castrodale@castrodaleengineering.com
Joe Rose	Coastal Precast Systems	joe@cpsprecast.com
Dave Neal	Coastal Precast Systems	dave@cpsprecast.com
J. R. Parimuha	Florence Concrete Products	jrparimuha@yahoo.com
Mark Perkins	Florence Concrete Products	markperkinsfcp@gmail.com

2. Approval of last meeting minutes. Since the minutes of the November 15, 2018, meeting had not been received by the DOT prior to the meeting, a motion was made to approve the draft minutes. The draft minutes were approved as submitted.

3. Old Business

   a. Technical Committee Meeting

      Reid Castrodale noted that there were a number of items from the Technical Committee that had not been addressed in the prior joint meeting. Lists of new items added during the November meeting and ongoing items for consideration by the Technical Committee were included in the minutes of the Nov. 15, 2018 meeting to allow discussion at the present meeting. Items were briefly reviewed to determine if work had been completed, more information was needed, or if the item was no longer needed so it could be removed from the list.

Regarding Item c as listed in the minutes, which addressed stressing strands in the draped position, it was reported that no action had been taken by the Department. Trey Carroll requested that information that had been sent previously be sent again. Richard Potts indicated that they use elongations to confirm the stress in the strands at the dead end, and it was working well and does not require using rams to restress at the dead end. Richard noted that a 20 ft length is recommended as a gage length for elongation, but he prefers up to 50 ft to get a more precise measurement. This will be discussed further at the Technical Committee meeting.

It was agreed that items g and h be removed from the agenda for the next Technical Committee meeting.

Reid Castrodale had requested and received information related to Item i, which addressed bearing details for skewed cored slabs and box beams. Information will be forwarded to Trey Carroll and will be posted on the G/C PCI website under the next Technical Committee meeting. Related to this issue, Richard Potts asked about the detail being used for slab or box units placed on crowned bearing seats. This situation makes it difficult to install the transverse post-tensioning strands in the field because of the angle break that occurs at the crown point.

It was also agreed that item j be removed from the agenda. Cabell Garbee recounted the discussions at the April meeting where it was clear that the contractors did not have a good understanding of limitations on delivery equipment and scheduling for girders. A discussion followed of how the correct information regarding delivery of girders, which was given at the meeting with the AGC committee in April, could be presented to a wider group of contractors. It was agreed that a presentation and/or a panel discussion could possibly be given at the NCDOT / AGC joint conference that is held every other year. The next conference will be in 2020. Todd Whittington agreed to check on the schedule for the meetings in 2020 and will ask the question about when planning starts for the conference and how we could be involved. Resident engineering staff would also be present at the conference which would be good.

A revised list of topics for consideration by the Technical Committee at their meeting in July appears at the end of these minutes.

b. RFID/Barcode Information

Cabell Garbee reported that the NC IT group indicated that the NCDOT portal to receive data directly into the HICAMs system will be operational in early April for the uploading of data for March into HICAMs. This change will route data directly to NCDOT rather than through Idencia. This new approach should have several advantages. The same data is being collected in the same format, and everything else will remain the same. There is some potential for tags becoming available from other sources in the future. The Department is obtaining tags for some other types of products from other suppliers as they expand to other types of products. This item should remain on the agenda for future meetings. [Item was removed from the Technical Committee meeting agenda].

c. Top Strand Details and Notes

Neither industry nor the Department has worked on this item. Joe Rose reported that Coastal likes using stressed top strands because it provides better lateral stability during shipping and handling. A concern is whether the strands get detensioned in the field. Richard Potts noted that using temporary top strands allows a significant reduction in stress at transfer. He also reported that they have offered to bring contractor personnel to their plant to train them how to detension top strands. Industry needs to provide a proposal on how to implement the concept, including plan notes.

d. Status of FIB Use

Trey Carroll reported that they are still planning to wait to release standards on FIBs until after the Harkers Island project is let. He also noted that we should be seeing more FIBs on both design/build and design/bid/build projects.

e. Web Splitting – Debonding Quantity

Reid Castrodale indicated that this item addresses concern about the current policy of using 50% debonding if web splitting occurs. He is to provide the Department with calculations demonstrating the concern. Discussion was deferred to the Technical Committee meeting.

f. Welded Wire Reinforcement Standards

Topic will be considered by the Technical Committee. Richard Potts asked if the Department had a limit on girder spacing, because it has a very significant effect on the end-region reinforcement. They do not have a published limit, although the deck design tables only go to 12 ft spacing.

g. Reduced Rubbing of Girders

Jason Poppe described a new procedure where all girders are wet sacked with a sponge to fill bug holes, then smoothed with a dry sponge. This provides a good finish with uniform color and avoids dry rubbing. He has prepared a presentation and guidelines for the procedure that he agreed to present at the Technical Committee meeting. Cabell Garbee requested that fabricators provide photos for training. It was agreed that this item can be removed from future agendas.

Richard Potts indicated that they are using a procedure for GDOT which employs a squeegee for the second pass. He will share photos of the results of this procedure with the Department.

h. Lateral Stability of Girders – Status of NCDOT design program and policy

This item is still to be considered by the Department, but they are waiting for the PCI spreadsheet before they do further work. It was reported that the spreadsheet should be completed by the end of June.

i. Field review of girders with vertical cracking using information from NCRs

Prestressers were encouraged to find NCRs for girders that experienced vertical cracking prior to detensioning but were approved for use. The girders should be from a range of exposure conditions and traffic volumes; older girders would also be preferred. NCRs including the structure number should be submitted to Cabell Garbee by June 30.

j. Standard repair procedures

Standard repair procedures have been collected for commonly submitted NCRs and repairs. The repair procedures are aligned with the PCI Repair Manual and are nearly ready for use. The procedures will simply reflect standard repair procedures that are already being used. If desired, a prestresser could submit a different repair procedure for a repair.

Peter Finsen pointed out that the PCI Repair Manual is being updated by JP Binard, but the target date for publication of the new manual is not known.

k. Standard operating procedures

Jason Civils reported that a standard operating procedure for prestressed concrete products is very close to being made available online. This will simply document practices already being used and will promote uniformity of inspection practices. Once it is posted, the Department will welcome comments.

l. Using strands for continuous for live load connections

The Department would like to review PCI guidelines and procedures used by other DOTs. Joe Rose recommended that a proposal on using strands should also include design considerations and repair procedures in the event that strands are cut that were intended for use as the connection. Richard Potts

suggested that possibly two more strands be shown by the plant as extended to allow for unintended cutting of strands.

m. Full-length debonding of strands (general note for girders)

It was noted that the plans for a recent Craven County project (Havelock Bypass) included some full-length debonded strands. The project was designed by a consultant. Trey Carroll was unaware of the use of full-length debonding in the project. Jeff White provided the following project information: Bridge on US 70 Bus. over US 70 Bypass between US 70 and SR 1824, Craven County, Project No. R-1015, Station 11+76.30 RP1AB, prepared by Kimley Horn. This is helpful since all prestressers can bid the project with full-length debonded strands if they wish.

JR Parimuha volunteered to develop a proposal for discussion at the Technical Committee meeting.

n. Silane sealer for vertical cracks prior to detensioning

This topic was raised at the last meeting where it was suggested that silane sealer be applied to vertical cracks that appeared prior to detensioning and close fully after detensioning instead of a 7-day wet cure. It was reasoned that the silane, which would be applied after detensioning and the closing of the crack, would act as a curing compound to retain the water present in the concrete. It was pointed out that the use of silane sealers does not appear in 1078-12 on vertical cracks prior to detensioning, but in 1078-13 on girder web splitting cracks, which required the use of silane on web cracks that were larger than 0.005 in. but less than 0.010 in. The silane would be used as a short-term solution to prevent drying of the concrete while autogenous healing occurs, so would not have to be reapplied with time. Cabell Garbee indicated that they would be open to considering this approach and requested that G/C PCI submit a proposal for their review. It was asked if the application of silane would affect the finish of the girder, so this should be investigated and discussed in background information presented with the proposal. It was agreed that this could be addressed without placing on the Technical Committee agenda.

o. Cored Slabs with 45 degree skew

Reid Castrodale reported that information had been received from PCI Northeast regarding the use of three bearings under slab-type products with skews. This would address rocking issues with these products. Richard Potts had reviewed the information briefly and said that it was a good approach. The information will be forwarded to the Department and will be discussed at the Technical Committee meeting. It was hoped that cored slabs and box beams with skews over 30 degrees will not become standard practice.

4. New Business

Early Payment for Materials

Joe Rose asked if the Department would consider early payment for materials in the case of the CFRP strands which will require a significant early investment. This should make sense for the Harkers Island project because the material will not be used for any other project.

Richard Potts indicated that GDOT has a related contract provision that addresses this topic. He agreed to forward the provisions to Todd Whittington who will discuss it with the Construction Unit. The GDOT provision only addresses girders, so Richard noted that it should be revised to include piling for this project.

Link to GDOT 2016 Supplemental Specifications – see article 109.07 Partial Payments:
http://www.dot.ga.gov/PartnerSmart/Business/Source/special_provisions/2016%20Supplemental%20Specifications/2016SupplementalSpecBook.pdf#search=standard%20specifications%20construction%20transportation%20systems

SCC Certification

Cabell Garbee reported that the Department plans to send their staff for SCC Technician Certification.

Flowable Concrete

Cabell Garbee reported that Ben Chola, the NCDOT Concrete Mix Design Engineer, was having some issues with how to classify mixtures that had high slump but did not qualify as SCC mixes. Cabell said that he was telling Ben to approve them since the fabricators know what they are doing and need the higher flow.

Concrete Mix Design Workshop

Peter Finsen reported that Paul Ramsburg with Sika was willing to give another PCI mix design workshop. A date was discussed, and it was agreed that July 10, the day before the Technical Committee meeting, would be a good day. The workshop would be held in Raleigh at a location to be determined. Peter received confirmation before the end of the meeting that Paul was available and willing to give the workshop on that date. Additional details will follow.

PCI Committee Days and National Bridge Conference – Rosemont, IL – Sept. 25-28, 2019

Peter Finsen reported that G/C PCI will invite four from NCDOT to attend as in the past. This event is not the convention or Precast Show but will have committee meetings and technical presentations.

5. Project Update

No project update was provided.

Harkers Island Project

At several points during the meeting, the Harkers Island project was discussed. The point of the project is that it will use non-metallic reinforcement wherever possible. Currently the only place where metallic reinforcement will be used is for the barriers, since they have not yet been crash tested with non-metallic reinforcement. Therefore, stainless steel strand will not be entertained as an option. Dave Neal suggested that without competition from stainless steel, a high price for the carbon strand should be expected. The Department realizes this and has obtained some grant funding that will help offset the difference in cost. Transverse reinforcement in the girder is expected to be glass or carbon fiber. The girders were also detailed with 2 strands in the web.

Trey Carroll provided the following quantities for the Harkers Island project:

Summary of Non-metallic Reinforcement Quantities

115 Girders approx. 728,000 LF of CFRP Strand
215 Piles approx. 206,000 LF of CFRP Strand

Shear/Misc. Reinforcement for the 115 Girders
GFRP Option: 459,000 LF of GFRP Bars (#3-#5 bars)
CFRP Option: 305,000 LF of CFRP Strand (0.6 in. diam.)

Girder and Piling Quantities

54” FIB Girders – 56 Girders (56 x 48 strands x 100’ = 268,800 LF.)
72” FIB Girders – 44 Girders ((32 x 62 strands + 12 x 66 strands) x 130’ = 360,880 LF)
78” FIB Girders – 15 Girders (10 x 38 strands x 99’ + 5 x 74 strands x 164’ = 98,300 LF)

24” x 24” PCP – 215 piles x 16 strands x 60’ = 206,400 LF

Shear Reinforcement Quantities for Girders

GFRP Option Per Girder:	CFRP Option Per Girder:
54": 3,355 LF	54": 2,175 LF
72": 4,820 LF	72": 3,175 LF
78": 2,960 LF (99' Gdr.)	78": 2,425 LF (99' Gdr.)
78": 5,920 LF (164' Gdr.)	78": 3,885 LF (164' Gdr.)
Bar sizes include #3, #4, & #5	0.6 in. diam. strand will be used for this reinforcement

Trey noted that the pretensioned CFRP strands would be stressed to 0.7 f_{pu}. The project is scheduled to be advertised in June for the July letting.

Mid-Currituck Bridge

The status of the project was briefly discussed. Details were not available. It is expected that there will be some resistance to the project as for other such projects.

6. Action Items:

   a. Todd Whittington agreed to check on the schedule and agenda for the 2020 joint NCDOT / AGC conferences as an opportunity for G/C PCI to present information on girder delivery
   b. G/C PCI to provide NCDOT (Cabell Garbee) photos of surface finish of girders before and after rubbing.
   c. G/C PCI to provide NCDOT (Cabell Garbee) photos before and after of girder repairs.
   d. G/C PCI to collect NCRs for girders with vertical cracks that form prior to detensioning that have been accepted for use; forward to Cabell Garbee for inspectors to evaluate during regular inspections.
   e. NCDOT to instruct inspectors to inspect girders as soon as forms are removed.
   f. Richard Potts to provide NCDOT SMU with temporary top strand details used by FDOT. [DONE]
   g. Joe Rose to provide NCDOT SMU with temporary top strand details used on Wilmington Bypass. [DONE]
   h. G/C PCI to provide proposal on implementation of top strand debonding including plan notes for detensioning in the field.
   i. Reid Castrodale to evaluate effect of 50% debonding on longitudinal reinforcement requirement.
   j. G/C PCI to collect information on standard end reinforcement details for Technical Committee meeting.
   k. Jason Poppe to give presentation and present guidelines for rubbing girders at Technical Committee meeting. [DONE]
   l. Richard Potts to forward to NCDOT photos of the rubbing procedures being used for GDOT.
   m. G/C PCI to identify issues or limits related to lateral stability, including the location of lifting loops.
   n. G/C PCI to provide PCI guidelines and examples from other DOTs for strands being used for continuity connections for the Technical Committee meeting.
   o. G/C PCI to provide proposed guidelines for dealing with cut strands that were intended for use in continuity connection for the Technical Committee meeting.
   p. JR Parimuha to provide proposal for general notes and design manual provisions for full-length debonding of strands in prestressed concrete products other than cored slabs and box beams.
   q. Reid Castrodale and Richard Potts to provide proposal for use of silane instead of wet curing for vertical cracks that form prior to detensioning but then close after detensioning. This would address potential difference in surface finish due to application of the silane.
   r. G/C PCI to try to find details using three bearings for skewed cored slabs and box beams. [DONE]

s. Richard Potts to forward GDOT provisions for early payment for materials. [DONE]

t. Gichuru Muchane agreed to approach Maintenance and Construction regarding attending joint meetings.

u. Cabell Garbee to identify contacts for NCDOT and provide a list of contacts to Peter Finsen for future meetings.

v. Reid Castrodale to prepare minutes from meeting. [DONE]

7. Next Joint Meetings: July 11, 2019, 1:30 at NCDOT SMU (Technical Committee)
November 14, 2019, 1:30pm at NCDOT MTU [*changed to Nov. 7, 2019*]
March 26, 2020, 1:30pm at NCDOT MTU

8. PCEF Meetings:

Last Meeting:	February 7, 2019	10 am – 4 pm in Raleigh, NC
Next Meetings:	August 15, 2019	10 am – 4 pm in Columbia, SC
	February 6, 2020	10 am – 4 pm in Atlanta, GA

9. Adjournment – 12:30 pm

Technical Committee Meeting & Tasks

Next Meeting: July 11, 2019 at 1:30pm at NCDOT - SMU

Tasks identified for the Technical Committee during this meeting:

a. Details for transverse ties in cored slabs or box beams with crowned supports

b. Full-length debonding of strands (general notes for girders)

Tasks identified for the Technical Committee during the November 15, 2018 meeting:

a. Vertical cracking inspection and marking

b. Evaluation of aesthetic quality of finish on girders – consider at 20 ft as for architectural concrete

c. Standard repair procedures

d. Standard operating procedures

e. Standard welded wire reinforcement option for girders

f. Use of strands for continuity connection detail

Ongoing tasks for the Technical Committee:

a. Temporary top strands

b. Lateral stability

c. Stressing strands in draped position

d. FIBs

e. Rubbing girders – *Presentation by Jason Poppe*

f. Bearing details for skewed cored slabs and box beams