MINUTES

SCDOT – PCI Joint Committee Meeting

SCDOT Headquarters Building, Room 306

May 3, 2018 – 1:30 PM

Terry Koon welcomed attendees and began the meeting at 1:30 PM. He thanked the RPGs that were present for coming to the meeting.

Several personnel changes at SCDOT were discussed. David Rister has moved to be the Mega Projects Construction Engineer. His previous position in Construction is being eliminated. Mark Hunter is now the Maintenance Engineer. Jim McCabe is expected to retire at the end of May.

Peter Finsen recognized Bobby Rochester with Smith-Columbia as a new member of G/C PCI.

Attendees introduced themselves and a sign-in sheet was circulated.

The following members (or representatives) were present:

SCDOT

Terry Koon	Structural Design Support, Co-Chair
Mabel Cuellar	Structural Design Support
Phillip Washington	Preconstruction
Qing Wang	RPG 2
Tong Li	RPG 3
John Caver	RPG 4
Hongfen Li	Design Build
Aly Hussein	Office of Materials and Research

PCI

Reid Castrodale	Castrodale Engineering Consultants, Co-Chair
Peter Finsen	Georgia/Carolinas PCI
Eric Deierlein	Tekna Corporation
J. R. Parimuha	Florence Concrete Products
Richard Potts	Standard Concrete Products
Bobby Rochester	Smith-Columbia
Jeff White	Prestress of the Carolinas

Academia

Paul Ziehl	USC

FHWA

Minutes of Last Meeting

Jeff White identified a correction to the minutes for the "Rubbing prestressed concrete girders" item on page 5 – change "hole" on line 6 to read "entire."

The minutes of the November 9, 2017, meeting were approved as corrected.

Old Business

01-6 *SCDOT Bridge Design Manual*

Terry Koon stated they plan to outsource updating the Bridge Design Manual (BDM) to a consultant. Funding is in the budget. G/C PCI would appreciate the opportunity to be involved on an advisory panel and/or to review the new manual as it is developed.

He also indicated that the Department has not made further progress on the Florida I-Beams (FIBs). They are being used on some projects. Questions have been raised regarding the type of steel intermediate diaphragms that should be used with the FIBs. Current SCDOT policy for steel diaphragms is a K-frame for girder depths greater than 54 in. and a channel diaphragm for girder depths of 54 in. and less. They continue to use a 2 in. diameter hole for the diaphragm bolts and the prestressers were comfortable with that size of hole. It was also noted that diaphragms follow the skew if it is less than 20 degrees but are staggered and placed normal to the girders for greater skews.

The Port Access project is using welded wire reinforcement (WWR). WWR was in the SCDOT standard plans years ago but was removed from lack of use. It will likely be added in the new BDM. It was suggested that the development of standard WWR end zone panels should be developed by the PCEF committee.

09-1 *Accelerated Bridge Construction Projects*

Terry Koon reported that the next field test on the Hanging Rock Creek Bridge was scheduled for May 9. He thought that there may be one more test after that one, after which the final report can be completed, which is required as part of the IBRD Program. No design changes resulting from this project have been developed yet.

No other ABC projects are active at this time.

12-1 *Tentative Letting List*

John Caver reported that he had checked the list online and found that RPG 4 projects had bridge types listed, but that projects from the other RPGs did not. He will talk to the other RPGs to encourage them to add the information to the system. The project manager should be responsible to enter the information. The tentative letting list generally contains projects within about a year of letting.

12-2 ***Shop Drawings***

It was agreed that since there are several issues related to shop drawings, the title of this item should be revised by eliminating "Electronic" from the topic title here and in future agendas.

Electronic Shop Drawings

Terry Koon reported that the AGC is also pressing for electronic submittals. Policies vary between the RPGs, but most accept submittals by email. Terry will encourage development of uniform policies. John Caver stated that software is not so important, but rather the workflow. The DOT has a 25 Mb limit on the size of files that can be transferred by email, so that can be a barrier, leading to the need for other solutions. Jeff White and J.R. Parimuha described the flow of communications in the NCDOT system where prestressers email their submittals to the contractor and it is submitted to the state using whatever methods are required. NCDOT has a website where the status of submittals can be reviewed.

Fabrication from Shop Drawings

SCDOT has permitted fabrication of girders from contract drawings, with prestressers only required to submit details and elongation calculations. However, prestressers should check with each RPG to determine what will be acceptable for a given project. As a result, G/C PCI asked for a list of the contacts in each RPG for this issue.

John Caver indicated that he would send the other RPGs a submittal from Jeff White that uses contract drawings, so they can see what is included in such a submittal. John said that they are very comfortable with this approach when they prepared and sealed the contract drawings in their office.

Inconsistencies in Shop Drawing Reviews

Eric Deierlein shared several examples of recent reviews where comments reflected a lack of understanding of the submittals and prestressed concrete design and fabrication. It was agreed that education on these issues is needed for engineers working in the Department and for consultants, since much of the Department's work is now being handled by consultants. The discussion that followed regarding the prestressed concrete design seminar is recorded in a later section of the minutes that address that topic.

16-2 ***UA Bars in BTs***

G/C PCI members indicated that they prefer the detail used by NCDOT instead of the UA bars in the current SCDOT detail. Smaller bars that are bent after removal of the headers are much easier to fabricate and can be adjusted in the field if necessary. It was also suggested that the Department consider allowing a detail using an equivalent area of steel with No. 6 bars instead of No. 5 bars in the NCDOT detail, which would reduce the

number of bars required for the detail. John Caver indicated that he had the NCDOT details.

It was also recommended that the sole plate detail be changed to eliminate the center row of studs by increasing the number of studs in the outer rows, maintaining the same total number of studs on the sole plate. The Department agreed to consider both the alternate to the UA bars and the sole plate details.

17-1 ***Debonding Bottom Row Strands***

Allowing debonding of strands in the bottom row of prestressed products, especially for box beams and cored slabs, was discussed. Without debonding in the bottom row, it is often difficult to get straight strand designs to work. It was also pointed out that debonding needs to extend beyond lifting point locations to allow handling of the element without exceeding limiting stresses. The Department will consider addressing this in a design memo. It also needs to be included in the seminar to educate designers.

17-2 ***Prestress Design Seminar***

It was agreed during the discussion of inconsistencies in shop drawing reviews, that education of engineers regarding the design and fabrication of prestressed concrete girders was needed. Aly Hussein and others indicated that design engineers rarely if ever have the opportunity to go to a prestress plant to observe fabrication, so they can better understand issues related to design and detailing. It was suggested that G/C PCI reach out to involve ACEC in developing and promoting the seminar for its members. It was even suggested that completion of such training could be considered as a requirement for obtaining design work from the Department. Most design engineers do not have a prestressed concrete design course unless they have an advanced degree.

It was agreed that Terry Koon would arrange a call with his supervisor, the SCDOT training staff, and Peter Finsen to discuss how to set up the seminar. Terry thought that they may try to send as many as five engineers from each RPG to the seminar.

17-3 ***Standard SIP Form Clip Insert Details***

Jeff White described the history of the SIP form clip requirements used in the NCDOT *Standard Specifications* Article 420-3 (D) (2) (j) (see p. 4-28 in 2018 edition). It was agreed that requiring the use of a minimum 2 in. x 3 in. 10-gauge clip spaced at 12 in. should be acceptable for all suppliers. Terry Koon indicated that he saw no problem with the idea and will discuss with the lab and construction to see if they have any issues.

17-4 ***Rubbing Prestressed Concrete Girders***

The prestressers confirmed that they are currently required to rub all faces of girders, and that all holes greater than ¼ in. must be repaired. The issue is that with repairs, the finish is not uniform, which is the requirement that results in the entire surface being rubbed. It

was noted that NCDOT and GDOT are experimenting with wet rubbing the surfaces of the girders and leaving that finish, which eliminates the issue with silica dust that comes from dry rubbing the girders. It was noted that exterior girders for SCDOT projects are painted in the field by the contractor, so wet rubbing after any holes are filled may not be necessary. It was suggested that this would be a good topic for discussion at the next PCEF meeting.

Terry Koon agreed to check with construction to see if they agree with the recommendation that only the exterior faces of girders be rubbed. It was not clear which SCDOT document gives the requirement for girder finish, but they will check.

17-5 ***Low Volume Roads Bridge Criteria***

Terry Koon reported that they hurried to complete this manual, but then funds were not available for projects. The manual can be accessed online. Flat slabs and cored slabs are the only structure type options for these bridges. The bridges in this category are all classified as Seismic Category A, and no sag vertical curves or low points are allowed on the bridge. The standard plans associated with this manual will replace the maintenance bridge standards. This was motivated because FHWA had concerns about using designs that were not involving engineers for design and for which there was no inspection during construction. Richard Potts stated that from his experience in Georgia that having good standards and QC are very important, especially for projects that are constructed by local authorities.

While this item is essentially complete, it was agreed to keep it on the agenda until some projects are constructed.

J.R. Parimuha stated that NCDOT allows full length debonding of strands for their low volume road standards. Terry Koon indicated that they will consider the concept.

New Business

For Information

PCI Convention and National Bridge Conference

The next PCI Convention will in Louisville, KY, from Feb. 28 to March 2, 2019. G/C PCI offered to again support four SCDOT representatives to attend.

Research

Peter Finsen asked if SCDOT had any research in progress. Terry Koon indicated that they have a 95% plan set for the deck girder project in Newberry County, so it should be getting close to being let.

Paul Ziehl indicated that he is doing some research on robotic inspection of both steel and concrete girders.

Next Meeting

The next joint meeting is scheduled for Thursday, November 8, 2018, at 1:30 p.m.

The next G/C PCI Committee meeting is scheduled for Thursday, August 16, 2018, in Columbia. A location for this meeting will need to be identified.

The meeting was adjourned at 4:00 P.M.