

# NC DOT / PCI Joint Technical Committee Meeting

Structures Design Conference Room  
September 27, 2007 2:30 PM

Submitted by  
Reid Castrodale, Chair

## Attendees:

**NCDOT:** David Greene, Tom Koch, David Snoke

**G/C PCI:** Reid Castrodale, Mike Means, J. R. Parimuha, Jeff White, Chip Harris, Peter Finsen

It was noted that several invitees were unable to come to this meeting, including Trudy Mullins, Tom Drda and Richard Potts.

## 1. Web Cracking

Tom Koch and Trudy Mullins had developed a revised Project Special Provision addressing prestressed concrete girder web splitting. Copies were distributed. The special provision gives generic requirements for the material to be used to seal cracks from 0.005 in. to 0.010 in. in width. It does not give product names nor does the Department expect to provide a list of qualified sealer materials, but would expect the producers to submit materials for approval.

The width of crack that must be sealed was decreased from 0.007 in. as appeared in previous versions of the PSP to 0.005 in. Cracks are measured using clear plastic "crack comparators."

It was noted that the crack width requirement for epoxy injection was taken from the PCI Repair Manual. NCDOT was not aware of any situations so far where epoxy injection was required. The earlier version of this PSP has been in use for some time, so epoxy injection could have been required.

David Greene wants to have this PSP finalized by our next Joint Committee meeting, which is Nov. 14. He agreed to send an electronic version to Reid Castrodale for distribution to the GCPCI members for comment. The GCPCI members agreed to return comments on the PSP to him no later than November 1.

## 2. Cored Slab Bridges with Precast Barriers and Approach Slabs

Tom Koch distributed plans for two bridges with cored slabs and precast barriers: B-3625 in Carteret County and B-3624 in Caldwell County.

They plan to use 1'-10" thick cored slabs to allow milling of up to 1 in. from the top surface to achieve final grade without using asphalt or other wearing surface.

The use of the Bridge Maintenance rail was considered, but FHWA will not allow it since federal funds are involved and the Bridge Maintenance rail has not been crash tested.

A barrier concept from the FHWA website that has been used by NYSDOT was discussed. However, it was discovered that this was a proprietary detail.

NCDOT is currently considering the elimination of the exterior void in the exterior unit so the anchors can be drilled in. They were interesting in the fabricators considering doing the drilling in the plant to eliminate that activity in the field.

Tom Koch discussed some of the work that has been done in trying to find a precast railing solution that will work for the LRFD Specifications requirements. He indicated that the current Bridge Maintenance design fails the computations, but it is only at the end of the railing, and not at the connection to the deck. Chip Harris then pointed out that the connection used by the Bridge Maintenance railing may be permissible, since the failure is not related to the connection but to reinforcing details at the ends of the precast rail sections. It was also suggested that the Bridge Maintenance railing could be made thicker to be more similar to the NYSDOT type of railing, which had passed the crash testing.

Details of the precast approach slabs were briefly discussed. It was agreed that the details looked good. It was suggested that NCDOT contact Sam Tyson at FHWA and/or David Merritt at Transtec Group, which is a consultant to FHWA for precast pavement systems, for information on projects already constructed using precast approach slabs.

### **3. Box Beam Shear Keys**

There was some discussion on the shear keys and transverse ties for box beams. It was agreed that a full-depth shear key at the tie location would be preferred. It was also discussed that the diameter of the hole for the transverse ties should be 3 in. to allow greater tolerance in placement of the boxes. It was also suggested that the vertical holes in the ends of box beams should be 3 in. diameter corrugated ducts to allow greater tolerances in bar and beam placement. NCDOT agreed to consider these changes to standard practices.

It was agreed that a large part of the reason for the increased hole size for the tie rod was to allow greater tolerance for hole placement, especially with the increased spans that are now being designed. It was noted that fabrication tolerances may need to be reexamined in light of the increased member lengths.

Chip Harris encouraged the DOT to consider using 0.6 in. diameter strands on the long span cored slabs, like 60 ft spans. With fewer strands, conflicts between strand locations and the vertical holes in the ends of beams could be eliminated. There was also discussion about having the same strand pattern in exterior and interior slabs, which may be possible with the larger strand size. It was noted that most long-span cored slabs are going to 27 in. box beams.

### **4. Precast Concrete Deck Demonstration Project – Martin County (B-4188)**

This completed project was briefly discussed. Tom Koch indicated that the project was successful, but that if there is another project with precast decks, they would probably design it with a grout bed under the panels. It was acknowledged that projects with no skew greatly simplify bridges of this type. There are no immediate plans for additional projects of this type.

### **5. Spliced Girders**

Spliced girders were briefly discussed. Several types of projects were mentioned for this type of structure, including single point urban interchanges, where long simple spans are required. In this case, it may be possible to use standardized end segments and a variable interior segment. It was agreed that this item would be dropped from future agendas until such time as there is greater opportunity or need for this type of construction.

## **INFORMATIONAL / DISCUSSION ITEMS**

### **6. Criteria for Selecting Bridge Material**

There was some discussion about the current policies of the Department regarding the selection of bridge girder materials. GCPCI members indicated that they had seen several recent

projects where steel girders have been designed for locations where prestressed concrete girders could have been used.

Tom Koch and David Greene were surprised to hear these complaints, thinking that most typical bridges were being designed in prestressed concrete. They felt that prestressed concrete was the preferred material type for most typical bridges, with steel being limited to very long or highly curved spans. Available girder depth is also an important criteria for selecting girder type.

It was mentioned that Greg Perfetti is part of a group that is working on a possible “tiered” plan for design of bridges, which may allow different standards to be applied for lower volume roads. This approach could allow a more efficient use of the limited bridge construction funds.

It was suggested that this topic be raised at the November meeting, including a broader discussion of the criteria used to determine material selection or girder type. Peter Finsen urged that life-cycle costs be included in the decision process.

## **7. Adjourn**

The meeting was adjourned at approximately 4:45 PM.