4002100-DISPOSITION OF CRACKS IN CAST-IN-PLACE CONCRETE
COMMENTS FROM INDUSTRY REVIEW

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Bob Graham
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Comments:

Parts of this spec are very onerous. Bridge decks are currently designed with little or no expansion joints and are therefore going to crack. Where and how much is anybodies guess. FDOT, with the new spec would shift the risk of determining the repair costs at bid time to the contractor.I believe FDOT should include the appropriate crack repair pay items in the bid and have their designers determine the quantities, thus everyone is bidding on a level playing field. Naturally if the contractor does not pour or cure according to spec then FDOT will not want to pay for any repairs (even though it was going to crack anyway). I guess that is why we have DRB's. Bob Graham

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Ghulam Mujtaba
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A. General Comments:

1. The proposed specification is a complete replacement of the 2007 version of the Standard Specification. The specification that has been sent for review shows only a few modifications in the form of additions and strike through. It is not clear if the changes are made in a special provision or supplemental specifications. .A clean copy in the form of the rewrite should have been sent. This is confusing.
2. The crack survey and mapping should be the responsibility of the contractor and the Department should review and approve it. The proposed specification requires the project personnel to survey the cracks and submit the report to the contractor for review comments. It indicates that the Engineer will make the final decision. This process is not in accordance with the contractor quality control process.
3. The proposed specification should mention that the investigator should determine the cause of the cracks in the concrete structure
4. The survey should include information about the time of the first occurrence of the cracks or the time when they were first exhibited.
5. It is important to note if the cracks are active or dormant.
6. There should be a penalty for the acceptance cracked concrete, when the deficiencies are caused by contractor’s negligence.

B. Specific Comments:

1. 400-21 Disposition of Cracks in Cast-In-Place Concrete

Change the title to “Disposition of Cracked Cast-In-Place Concrete”. The content of the article is related to the disposition of concrete, not disposition of crack.

2. 400-21.1 General
   Change to read, “The survey, investigation, and disposition of cracked cast-in-place concrete are described herein.”
3. 400-21.2 Investigation, Documentation and Monitoring, Sentence 1
   Change to read, “The Contractor shall perform a thorough survey of the exhibited cracks in the cast-in-place concrete structures.”
4. 400-21.2 Investigation, Documentation and Monitoring, Sentence 2
   Change to read, “The survey includes the measurements of the crack width, length, and depth.”
5. 400-21.2 Investigation, Documentation and Monitoring
   In the contractor quality control projects, it is better if the contractor’s quality control manager report that cracks have been exhibited. The crack survey shall be done by contractor and verified by the Department. It is important to determine the cause of the crack and also note if the cracks are active or dormant.
6. 400-21.2 Investigation, Documentation and Monitoring, Sentence 5
   The sentence is fragmented. The Engineer will monitor … determined by Engineer”
7. 400-21.2 Investigation, Documentation and Monitoring, Last Sentence
   It is not clear that which type of personnel should the contractor provide to perform crack monitoring. The personnel may be technicians or helpers to assist the Engineer related to the safety. The roles and responsibilities of the Department and Contractor should be known.
8. 400-21.3 Classification of Cracks, Sentence 2
   Define “shallow”
9. 400-21.3 Classification of Cracks, Last Sentence
   This should be revised. The contractor should survey the cracks and prepare a report related to cause of the cracks, their repair method, and proposed credit to the Department for acceptance of concrete. The Engineer should verify the information and review the proposed repair method.
10. 400-21.4 Resolution, Paragraph 2
    Change to “...structural stability and durability of cracked concrete structures…”
11. 400-21.4 Resolution, Paragraph 4
    Change “...as determined by Engineer.” to “…as required by the Contract Documents.”
12. Table 2, Note 6
    The Note. No.6 does not show any reference to any items in the Table.

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Comments:

I think Rusty Birchall could not have made it more clear. This change in the specs is insane.

Jerry

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Rusty Birchall
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Comments:

In general, I think this rewrite of the current spec (2007) is awful. There is nothing wrong with the spec in the 2007 book. Why are they trying to reinvent the wheel here? I think the method of determining crack type is vague and leaves too much open to interpretation. This spec forces the contractor to bid on an unknown quantity of cracks of unknown severity and unknown treatment method. That means high cost to FDOT because of the risk inherent in forcing the contractor to assume responsibility for all cracking.

Specifically:

400-21.2 - "with concurrence of the Enginner." - Why would I need his concurrence to inspect the deck for cracks. Perhaps the intent is to say "in conjuction with". This seems like something that the Engineer is going to do anyway. Why burden the contractor further with an onerous specification when FDOT is likely going to do one of their own because they won't trust the contractor's?

400-21.2 - "...inspect....a minimum of 7 days after the bridge has been opened to full unrestricted traffic." How will this be accomplished? On a major interstate or arterial, when will this be done? At night, when it is difficult to see cracks? What happens if the bridge shows additional cracking after opening to traffic. Whose liability is that?

400-21.3 - "Evaluate cracks and recommend whether cracks are nonstructural or structural" This is going to be left to the contractor? Wouldn't this fall under the qualifications of an Engineer, not a contractor? Is anyone going to accept the contractor's "recommendation"?

400-21.4 - Resolution - "No additional compensation or contract time shall be allowed for repairing or replacing cracked concrete." Why not? If a contractor has constructed the bridge in accordance with plans and the placement and curing specifications, and the bridge cracks, what has he done wrong? If the bridge cracks after placement of the deck during the addition of dead or live loads, why is the contractor responsible for it? How is a contractor going to determine an amount prebid to place in his proposal to cover the cost of an unknown quantity of cracking.

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Keith Waugh
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Comments:

I see nothing wrong with 400-21 as it appears in the 2007 Standard Spec. book.

This re-write looks like it should belong in FDOT's guidelines for CEI inspection, other than the last sentence of 400-21.4.

I foresee additional cost and conflict from this proposed specification.

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Ron Meade

Comments:

Spec 4002100 (wasn't available from the drop down menu)

Section 400 - 21.4 Resolution - Last sentence was changed to included the extra wording that was caused by inadequate curing effort or inadequate construction practice as determined by the Engineer.

It seems by adding this extra wording we are sending the message that if cracks occur that don't appear to be caused by inadequate curing or inadequate construction practices, then we will pay the contractor additional compensation to repair or replace.

Tables 1 and 2 should include the wording non-structural, since these tables only apply to non-structural cracks.

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Comments:

Great job, new spec version!

Section -21.2: The Engineer will inspect as soon as surface is visible, ADD "and" between 7 and 31 days after full dead load, and a minimum of 7 days after unresticted live .... We want all three times not one or the other.

-21.3.1: REPLACE everywhere LOT with words like "area, section", etc. to conform to T. Malerk not using LOT.

End Comments. Thank-you.

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Eric Jaggers
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Comments:

1. It would seem to me that the Department should identify whether or not cracks are present and to what extent. After the discovery of such cracks is should be the Contractors responsibility to monitor or provide and independent engineer to perform some sort of Engineering Analysis. It should be handled by having the Contractor submit a DDM and determine themselves what the disposition of the in place concrete and its structural adequacy.