

4500604500 PRECAST PRESTRESSED CONCRETE CONSTRUCTION
COMMENTS FROM INTERNAL/INDUSTRY REVIEW

Ghulam Mujtaba
352-955-6685
Ghulam.Mujtaba@dot.myflorida.com

Comments: (5-9-12, Internal)

1. Section 450-6.4.2 Cold Weather (last sentence):

The proposed change allows the exposing of the strands after 24 hours to cold weather. During cold weather this may cause self detensioning of strands. I recommend deletion of “or 24 hours, whichever is less”.

Response: No change made. The language will remain as agreed during meeting between the industry representatives and FDOT. Calculations subsequently were performed which focus on the strain in the strands caused by change in temperature of the material itself (not ambient temperature). Based on these calculations, in order to yield a standard ½” diameter, 270 ksi, low-relaxation strand stressed to 75% fpu, the temperature of the strand would have to decrease by 248°F. This is not likely to occur under normal operating conditions. It is recommended that the Materials Office re-evaluate the entire specification regarding cold weather protection of strands.

2. Section 450-10.1.1 Cold Weather Concreting:

The proposed changes allow the concrete temperature to be less than 55 degrees for thinner sections and 50 degrees for piles and the thicker sections. The current Specification meet the requirements of ACI 306 Cold weather Concreting. See Table 3.1 ACI 306R-88.

Response: See response to Comment No. 1.

3. Section 450-10.6 Curing:

The addition of the phrase, “upon setting of concrete” should be deleted. This may be interpreted that removal of forms will be allowed after setting of concrete. This may require the determination of set time of concrete. The form removal is already included in 450-10.9. There is no need for inserting phrase of “upon setting of concrete”. It creates confusion.

Response: “Upon setting of concrete” was moved to be applicable only to the loosening of the forms. The forms will still remain for 12 hours or until the release strength is reached.
Change made.

4. 450-11.1 Detensioning General (last paragraph):

The addition of the phrase, “upon setting of concrete” should be deleted. See comment No. 3

Response: See Response to Comment No. 3.

5. 450-12.5 Cracks fifth line “major”

Delete the word “major”. This will be in conflict with 450-12.1, which requires all major deficiencies to be evaluated.

Response: Sentence revised to read as follows (similar to suggestion by Ken Shartle): *If the total surface length of all cracks within a single product, regardless of width, located between the end zones exceeds one-quarter of the product's length, an engineering evaluation and disposition in accordance with 450-14 is required.*

Changes made.

6. 450-14.2(3) Submittal of Proposal for Engineering Evaluation:

The addition of "at the discretion of the engineer performing the evaluation, engineering calculations may not be necessary" is redundant. Currently the specification allows the engineer who is doing the evaluation to provide supporting informing for his recommendation. It may require structural and durability analyses or it may not.

Response: It is often interpreted that a structural evaluation must include calculations. Our office has seen calculations for conditions that do not exist in reality, in an effort by to engineer to provide some sort of calculation to obtain acceptance of a product. This has been moved to the first paragraph of this section and expanded to further define an "engineering evaluation".

However, the language has been further modified in response to Dave Sadler's comments.

Changes made.

David Sadler (Steve Plotkin)

414-5203

Comments: (5-9-12, Internal)

1. 450-12.2.2 Spall (3rd paragraph):

Add highlighted text and delete text "*back of the first layer of rebar plus one inch*".

With the exception of spalls in the bearing areas and edge of the top flange, a minor spall is defined as a spall not larger than 2.0 square feet and no deeper than one inch plus the sum of the thickness of concrete cover and the diameter of the largest rebar in the first layer of rebar back of the first layer of rebar plus one inch. Repair minor spalls in accordance with 450-13.4.

Response: Language modified to read as follows: *...deeper than one inch plus the sum of the concrete cover and the diameter of the bar in the first layer of reinforcing.*

Changes made.

2. 450-14.2 Submittal of Proposal for Engineering Evaluation:

Move inserted language in first paragraph to 450-14.2(3) as shown.

450-14.2 Submittal of Proposal for Engineering Evaluation: ~~*Engineering evaluations must include an engineering discussion of the product deficiencies and/or repairs which may consist of comparative discussions of historical or research documentation and if applicable, engineering calculations to support the engineering discussion.*~~

3. *A structural performance and durability evaluation of the product which must explain why the performance and durability of the repaired deficiency is acceptable as supported by any or all of the following types of information: written evidence of a previously approved comparable deficiency and its repair,*

documented research that demonstrates the proposed repair to be effective or engineering calculations that prove that performance and durability will be acceptable.

Response: Language has been relocated and improved based on these comments. Other changes to Section 450-14.2 have also been made to reduce repetition and improve the flow of information. See revised Section 450-14.2.

Changes made.

Dan Hurtado
414-4155
dan.hurtado@dot.state.fl.us

Comments: (4-31-12)

1. 450-14.2 "The repair proposal must be completed by the Contractor's Engineer and..." The term "Contractor's Engineer" is not defined in the Spec's. This should either be "Contractor's Engineer of Record", "Prequalified Specialty Engineer" or "Specialty Engineer".

Response: Agree. Language changed to "Contractor's Engineer of Record".

Change made.

2. 450-14.2, Item 3 under the repair proposal requirements: The sentence, "The evaluation must be supported by any or all of the following types of information" could be reworded as, "The evaluation must be accompanied by one or more of the following:". The phrase "must be supported by" does not require its inclusion with the proposal. The phrase "any or all" is unclear. Item c. under the same section: Suggest removing the words "If applicable," because they are redundant. If they are not applicable, they will not be included. Also, presumably engineering calculations would be included in one of the other documentation types (a or b).

Response:

Agree with first part of comment: "any or all" has been changed to "one or more".

Change made.

Disagree with second part of comment: It is often interpreted that a structural evaluation must include calculations. Our office has seen calculations for conditions that do not exist in reality, in an effort by the engineer to provide some sort of irrelevant calculation only to obtain acceptance of a product. It is clear from our experience that "If applicable" is neither redundant nor understood by enforcers of this specification. Engineering calculations may not be required for the other documentation types (a or b).

No Change made.

Katie Bettman
904-360-5391
katie.bettman@dot.state.fl.us

Comments: (6-29-12)

1. 450-10.1.1 used to require protection of the concrete until the prestressing steel was detensioned. By removing "then maintain the temperature at or above 50°F until the prestressing steel is detensioned" and leaving "whichever occurs first," the required protection is no longer in

place until detensioning. This is also true for 450-6.4.2 with the addition of the phrase “or 24 hours after placing concrete, whichever is less.” I would think we would still want the concrete temperature to be maintained until the structure was detensioned especially since we left in the sentence, “Continuously monitor the temperature of the concrete or the ambient air around the product until the product is detensioned.”

Response:

These changes were made as a result of a meeting with the prestressing industry and the State Materials Office. Please see the above Comment No. 1 from Ghulam Mujtaba and the response. The industry was not concerned with the continuous monitoring of the temperature because it does not require personnel to remain on site; however, I recommend the State Materials Office review Section 450 for consistency on these matters.

No change made.

2. 450-14.2 references The Contractor’s Engineer in the 3rd paragraph, but references The Contractor’s Engineer of Record under item 5. The Contractor’s Engineer of Record is defined in Section 1, while The Contractor’s Engineer is not defined. I think it was meant to be Contractor’s Engineer of Record. If not, item 5 needs to be changed as well and The Contractor’s Engineer needs to be defined.

Response:

Agree. Changed the first occurrence to read, “Contractor’s Engineer of Record”.

Change made.
