Florida Department of Transportation

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M E M O R A N D U M

DATE: May 26, 2015

TO: Specification Review Distribution List

FROM: Daniel Scheer, P.E., State Specifications Engineer

SUBJECT: Proposed Specification: **4001604 Concrete Structures.**

In accordance with Specification Development Procedures, we are sending you a copy of a proposed specification change.

The changes are proposed by John Westphal of the State Construction Office to clarify the treatment of approach slab as bridge deck under Curing Concrete, Protection of Concrete and Approach Slabs.

Please share this proposal with others within your responsibility. Review comments are due within four weeks and should be sent to Mail Station 75 or online at http://www2.dot.state.fl.us/ProgramManagement/Development/IndustryReview.aspx . Comments received after **June 23, 2015,** may not be considered. Your input is encouraged.

DS/ot
Attachment

CONCRETE STRUCTURES.
(REV 5-~~15~~*26*-15)

SUBARTICLE 400-16.4 is deleted and the following substituted:

400-16.4 Bridge Decks *and Approach Slabs*: Cure bridge decks *and approach slabs* for a duration of seven days. Apply a membrane curing compound to the ~~deck~~ top surface in accordance with 400-16.2 using a compressor driven sprayer. In general, apply curing compound ~~to a concrete deck~~ when the surface is damp and after all pooled water has evaporated. For Short bridges, begin applying curing compound immediately after the initially placed concrete has been floated, straightedged, textured and a damp surface condition exists and continue applying compound as concrete placement progresses with as little interruption as possible until the entire *top* ~~deck~~ surface has been coated with compound. For Long bridges, begin applying curing compound to the initially placed concrete as soon as a damp surface condition exists and continue applying compound as concrete placement progresses with as little interruption as possible until the entire *top*~~deck~~ surface has been coated with compound. ~~However, f~~*F*or ~~both~~ *all*~~Short and Long~~ bridges, the elapsed time between the initial placement of deck *or approach slab* concrete and the completed application of curing compound must not exceed 120 minutes. The 120 minute limit may be extended by the Engineer if project specific factors (cool temperatures, high humidity, retarding admixtures, etc.) ~~are~~ prolong~~ing~~ wet surface conditions.

Prior to the first deck *or approach slab* placement, submit to the Engineer the method that will be used to periodically measure the rate of application of curing compound in, gallons/~~sq~~ *square* f*oo*t as the ~~deck~~ *concrete* placement progresses. Prior to the placement of each deck *or approach slab*, submit to the Engineer the anticipated quantity of curing compound in gallons along with the corresponding square feet of ~~deck~~ *concrete* to be covered to meet the coverage rate in 400-16.2. Compute the actual quantity of curing compound applied at the conclusion of each *concrete*~~deck~~ placement and submit the quantity to the Engineer. Apply the curing compound from a work platform.

Place curing blankets on all exposed surfaces which are not formed as soon as possible with minimal effect on the surface texture. Place the curing blankets with sufficient overlapping seams to form an effective moisture seal. Before using curing blankets, mend tears, splits, or other damage that would make them unsuitable. Discard curing blankets that are not repairable. Wet all curing blankets immediately after satisfactorily placing them and maintain them in a saturated condition throughout the seven day curing period. Supply sufficient quantity of water meeting the requirements of Section 923 at the job site for wetting the blankets.

Where a bridge deck *or approach* slab is to be subjected to walking, wheeling or other approved construction traffic within the seven day curing period, protect the curing blankets and the *concrete*~~slab~~ surface from damage by placing wooden sheeting, plywood or other approved protective material in the travel areas.

When the ends of the curing blankets are rolled back to permit screeding of adjacent *concrete*~~bridge deck slabs~~, keep the exposed surfaces wet throughout the period of exposure.

~~Removal of *b*~~*Bridge deck* bottom and side forms *may be removed* after 72 hours ~~is acceptable upon~~ *in* compliance with 400-14. *Approach slab side forms may be removed after 72 hours.* Apply membrane curing compound to all surfaces stripped of forms within one hour of loosening. Apply curing compound according to 400-16.2.

ARTICLE 400-17 is deleted and the following substituted:

400-17 Protection of Concrete.

400-17.1 Opening to Traffic: *Do not open* ~~Close~~ concrete bridge decks*, approach slabs,* ~~and~~ *or* culverts to traffic for ~~a period of~~ at least 14 days after *concrete* plac~~ing~~*ement* ~~and for such additional times as deemed advisable~~. ~~In the operation of placing~~*During placement operations*, ~~the Contractor~~*concrete* may *be* wheel*ed* ~~concrete~~ across previously ~~poured~~ *placed* slabs after they have set for 24 hours *and*~~, provided~~ plank runways are used to keep the loads over the beams.

400-17.2 Storing Materials on Bridge Slabs: Do not store heavy equipment or material, other than light forms or tools, on concrete bridge slabs until 14 days after they have been ~~poured~~*placed*. ~~For all stockpiles, tools, and equipment stored on bridge slabs at any time,~~ ~~o~~*O*btain ~~prior~~ approval ~~by the Department, and~~*from* the Engineer *prior to storing materials, tools or equipment on bridge decks at any time.* ~~will require any such stored materials or equipment to be d~~*D*isperse~~d~~ *any such loads* ~~in order~~ to avoid overloading ~~any structural part~~*the structure*.

400-17.3 Time of Placing Superstructure: ~~In the case of piers or bents with concrete caps, d~~*D*o not place the weight of the superstructure or ~~of~~ beams on ~~the caps~~*concrete substructure elements for at least 10 days after placement* ~~until they have reached the age of 10 days~~.

400-17.4 Alternate Procedure: As an ~~alternate~~ *alternative to* ~~procedure, in lieu of~~ the time delay periods set forth in 400-17.1 and 400-17.3, *test cylinders may be prepared and tested by the Contractor in accordance with 346-5 and a determination made using one of the following methods:*

1.~~test beams or cylinders may be cast from representative concrete and cured identically with the concrete in the corresponding structural component. Make the test beams in accordance with ASTM C31 and test them in accordance with ASTM C78.~~ When the *cylinder* test results indicate ~~a minimum flexural strength of 550 psi for beams or~~ the minimum 28 day compressive strength shown in the Plans, concrete bridge decks*, approach slabs,* and culverts may be opened to traffic or the superstructure and beams may be placed on caps.

2. Provide signed and sealed calculations, prepared by a Specialty Engineer, ~~*to the Engineer for approval*~~ *demonstrating that the concrete caps can safely support the weight of the girders for the current concrete strength to the Engineer for approval.*

~~However, r~~*R*~~egardless of beam or cylinder break results~~*the procedure used*~~*In any event*, ~~fully~~ comply with the ~~bridge deck~~ curing provisions of 400-16~~.4, including the requirement for curing blankets to remain in place for seven days~~.

ARTICLE 400-20 is deleted and the following substituted:

400-20 Approach Slabs.

Construct approach slabs at the bridge ends in accordance with the applicable requirements of Section 350 using Class II (Bridge Deck) concrete. Place the reinforcement as specified in 350-7 and Section 415.

~~The approach slab may be opened to traffic, vehicular or construction equipment, 14 days after concrete placement or after the prescribed curing period has elapsed and the concrete has attained the required 28 day cylinder strength.~~