ORIGINATION FORM
Proposed Revisions to the Specifications
(Please provide all information - incomplete forms will be returned)

Date: 04/08/2019

Office: Materials

Originator: Richard DeLorenzo

Specification Section: 400

Telephone: 352-955-6667

Article/Subarticle: 400-14, 400.17.4,

email: richard.delorenzo@dot.state.fl.us

Will the proposed revision require changes to:

Publication	Yes	No	Office Staff Contacted
Standard Plans Index	○	◉	
Traffic Engineering Manual	○	◉	
FDOT Design Manual	○	◉	
Construction Project Administration Manual	○	◉	
Basis of Estimate/Pay Items	○	◉	
Structures Design Guidelines	○	◉	
Approved Product List	○	◉	
Materials Manual	○	◉	

Will this revision necessitate any of the following:

Design Bulletin ☐ **Construction Bulletin** ☐ **Estimates Bulletin** ☐ **Materials Bulletin** ☐

Are all references to external publications current? **Yes** ◉ **No** ○

If not, what references need to be updated? (Please include changes in the redline document.)

Why does the existing language need to be changed?

Industry request to allow concrete maturity use for form removal.

Summary of the changes:

400-14 Added language for use of the maturity meter for determining form removal strength. 4(

Are these changes applicable to all Department jobs? **Yes** ◉ **No** ○

If not, what are the restrictions?

Contact the State Specifications Office for assistance in completing this form.
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M E M O R A N D U M

DATE: May 2, 2019

TO: Specification Review Distribution List

FROM: Dan Hurtado, P.E., State Specifications Engineer

SUBJECT: Proposed Specification: **4001400 Concrete Structures.**

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

This change was proposed by Richard DeLorenzo of the State Materials Office (SMO) to modify the language.

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 **May 30, 2019,** may not be considered. Your input is encouraged.

DH/dt
Attachment

CONCRETE STRUCTURES.
(REV ~~4-12-19~~4-30-19)

ARTICLE 400-14 is deleted and the following substituted:

400-14 Removal of Forms.

Use the table below as the criterion for minimum time or compressive strength required before removal of forms or supports.

When using the time period criterion, include in the time period all days except days in which the temperature falls below 40ºF.

Use the specified 28-day minimum compressive strength value as stated in 346-3.1 for each Class of Concrete utilized.

Location of Concrete Placement	Minimum Time for Form Removal for any Strength Concrete*	Minimum (%) of 28-day Compressive Strength for Form Removal
(1) Deck slabs, top slabs of culverts and bottom of caps, forms under sidewalks, and safety curb overhangs extending more than 2 feet		
(a) Class II ~~(~~Bridge Deck~~)~~	7 days**	75**
(b) Class II (Other than Bridge Deck)	7 days	75
(c) Class III	7 days	70
(d) Class IV	7 days	60
(e) Class V	7 days	50
(2) Walls, piers, columns, sides of beams and other vertical surfaces	24 hours***	50***
(3) Front face form of curbs	6 hours	70

* For mass concrete, remove forms in accordance with 346-3.3
** Reference 400-16.4
***Do not place additional load on the section until 70% of the specified 28-day concrete strength is attained. Also, refer to 400-7.4.

When using the percent of required strength, cast test cylinders for each mix for compressive strength determination, ~~or~~ develop a curing concrete strength versus time curve (S/T Curve) or a strength-maturity curve. ~~which~~Either curve ~~can~~may be used in lieu of multiple test cylinders to determine when the percent of required strength has been met.

Prior to ~~curve~~ use~~:~~, obtain the Engineer's approval of the S/T Curve and its supporting data. An approved testing laboratory may be used to provide this information with approval of the Engineer. Plot S/T Curves using at least three different elapsed times that begin once test cylinders are cast; however, one of the elapsed times must be prior to the Contractor's intended form removal. Each elapsed time plotted must have a corresponding compressive strength computed by averaging the compressive strength of two test cylinders.

Cure such test cylinders as nearly as practical in the same manner as the concrete in the corresponding structural component, and test them in accordance with ASTM C39 and ASTM C31. Perform cylinder casting, curing, and testing at no expense to the Department and under the observation of the Engineer. When the S/T Curve indicates a compressive strength equal to or greater than the percentage of specified strength shown in the table above for form

removal, the Contractor may remove the forms. When the ambient air temperature falls 15ºF or more below the ambient air temperature that existed during development of a S/T Curve, use a S/T Curve that corresponds to the lower temperature and that is developed in accordance with this section.

Prior to using the strength-maturity method, obtain the Engineer's approval of the strength-maturity curve and its supporting data. Estimate the strength development of concrete using the strength-maturity method in accordance with ASTM C1074. An approved testing laboratory may be used to provide this information with approval of the Engineer. Develop the strength-maturity curves at no expense to the Department ~~and under the observation of the Engineer~~.

Do not remove forms at any time without the consent of the Engineer. Even when the Engineer provides consent to remove the forms, the Contractor is responsible for the work.