ORIGINATION FORM
Proposed Revisions to the Specifications

(Please provide all information - incomplete forms will be returned)

Date: 10/26/2020

Office: State Materials Office

Originator: Jose Armenteros

Specification Section: 346

Telephone: (352) 955-6666

Article/Subarticle: 3.4, 4, 6.4, 7.2.1, 7.6, 7.7

email: Jose.Armenteros@dot.state.fl.us

****Will the proposed revision require changes to:**

Publication	Yes	No	Office Staff Contacted and date contacted
Standard Plans Index	○	◉	Rick Jenkins, Cheryl Hudso
Traffic Engineering Manual	○	◉	Javier Ponce 10/26/2020
FDOT Design Manual	○	◉	Bobby Bull 10/26/2020
Construction Project Administration Manual	○	◉	Scott Arnold 10/26/2020
Basis of Estimate/Pay Items	○	◉	Melissa Hollis 10/26/2020
Structures Design Guidelines	○	◉	Ben Goldsberry 10/26/2020
Approved Product List	○	◉	Karen Byram 10/26/2020
Materials Manual	○	◉	Jose Armenteros 10/26/202

**This section must be completed prior to processing proposed revisions.

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?

Per Industry request, Table 346-4 language was clarified. Per DMRO request (1) colored concrete was added, (2) exceptions to the Maximum Allowable Transit Time were added (3) adding water to the concrete at the jobsite was clarified to avoid current misinterpretations.

Summary of the changes:

(1) Language was clarified in Table 346-4. (2) 346-4.3, colored concrete was added, (3) 346-7.2.1 Maximum Allowable Transit Time exceptions were added, (4) 346-6.4 and 7.6 language was simplified and improved.

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: December 10, 2020

TO: Specification Review Distribution List

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

SUBJECT: Proposed Specification: **3460304 STRUCTURAL PORTLAND CEMENT CONCRETE**

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

The changes are proposed by Jose Armenteros from the State Materials Office to clarify language in Table 346-4, add colored concrete, modify maximum allowable transit time, and simplify language in the Standard Specification.

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://fdotewp1.dot.state.fl.us/programmanagement/development/industryreview.aspx . Comments received after **January 7, 2021,** may not be considered. Your input is encouraged.

DS/dh

Attachment

STRUCTURAL PORTLAND CEMENT CONCRETE
(REV 12-3-20)

SUBARTICLE 346-3.4.1 is deleted and the following substituted:

346-3.4 Durability for Concrete Construction:

346-3.4.1 Minimum Cementitious Materials Content: Ensure that the produced concrete meets the minimum amount of cementitious materials content in Table 346-4.

Table 346-4
Minimum Amount of Total Cementitious Materials Content
(pounds per cubic yard of concrete)

Concrete ~~Application~~Class	Environmental Classification		
	Extremely Aggressive	Moderately Aggressive	Slightly Aggressive
I, I (Pavement), II, and III (Seal)	470		
II (Bridge Deck), III, IV, IV (Drilled Shaft), V, V(Special), VI and VII~~Reinforced Concrete~~ ~~(1)~~	600	550	510
~~Non-reinforced Concrete~~	~~470~~		

~~Notes:~~
~~(1) The Engineer may allow a lower total amount of cementitious materials content in concrete Class I, Class I (Pavement), Class II and Class III.~~

ARTICLE 346-4 is expanded by the following:

346-4.3 Colored Concrete: When colored concrete is required, use coloring agents meeting the requirement of ASTM C979. Add coloring agents to the concrete mix in accordance with the manufacturer's recommendation.

Fabricate two~~-~~-20 inch x 20 inch x 2 inch mockup panels of proposed design mix for Engineer's review and acceptance. Upon the demonstration of satisfactory mockup, the Engineer will approve the proposed colored concrete mix design.

Color shall be integral and consistent throughout the colored concrete surfaces. Remove and replace colored concrete which exhibits color variation at no expense to the Department.

SUBARTICLE 346-6.4 is deleted and the following substituted:

346-6.4 Plastic Property Tolerances: Reject concrete with slump or air content that does not fall within the specified tolerances, except as noted below, and immediately notify the concrete production facility that an adjustment of the concrete mixture is required. If a load does not fall within the tolerances, test each subsequent load and the first adjusted load. If failing

concrete is not rejected or adjustments are not implemented, the Engineer may reject the concrete and terminate further production until the corrections are implemented.

~~Do not allow concrete to remain in a transporting vehicle to reduce slump. Water may be added only upon arrival of the concrete to the jobsite and not thereafter.~~

At the Contractor's risk, water may be added at the placement site immediately after completion of the initial slump test, either to correct a low slump or to increase the concrete workability, provided the addition of water does not exceed the water to cementitious materials ratio as defined by the mix design.

After adding water, perform an additional slump test to confirm the concrete is within the slump tolerance range. If the slump is outside the tolerance range, reject the load. If an adjustment is made at the concrete production facility, perform a slump test on the next load to ensure the concrete is within the slump tolerance range. Do not place concrete represented by slump test results outside of the tolerance range. Include water missing from the water storage tanks upon arrival at the project site in the jobsite water added.

Do not allow concrete to remain in a transporting vehicle to reduce slump.

SUBARTICLE 346-7.2 is deleted and the following substituted:

346-7.2 Transit Truck Mixing: Produce a completely uniform mixed concrete in a truck mixer for 70 to 100 revolutions at the mixing speed designated by the truck manufacturer.

Prior to starting the discharge of the concrete at the jobsite, when water is added, record the added quantity and mix the concrete 30 additional drum mixing revolutions. Do not make more than two mix adjustments. Seek approval from the Engineer prior to using a central mixer and depositing the batch into a truck mixer.

346-7.2.1 Transit Time: Ensure compliance with Table 346-8 between the initial introduction of water into the mix and completely discharging all the concrete from the truck. Reject concrete exceeding the maximum transit time. T~~For critical placements, with t~~he Engineer may~~'s~~ approve~~a~~ an extension of~~l,~~ the transit time which will be identified on the approved~~may be extended to the allowable mixing time shown in the~~ mix design.

Table 346-8	
Maximum Allowable Transit Time	
Non-Agitator Trucks	Agitator Trucks
45 minutes	60 minutes
75 minutes (1)	90 minutes (1)

Note:
(1) When a water-reducing and retarding admixture (Type D, Type G, or Type II) is used.

346-7.2.2 Placement Time: All the concrete in a load must be in its final placement position a maximum of 15 minutes after the transit time has expired unless a time extension is approved by the Engineer.

For Class IV (Drilled Shaft) mixes, placement time may be extended provided the slump loss time of the first concrete placed is not exceeded throughout the elapsed time.

The Engineer may perform Independent Verification (IV) testing to verify the plastic and hardened properties of the concrete when a time extension is granted.

SUBARTICLE 346-7.6 is deleted and the following substituted:

346-7.6~~Adding Water to Concrete at the Placement Site:~~ ~~Water may be added at the placement site provided the addition of water does not exceed the water to cementitious materials ratio as defined by the mix design. After adding water, perform a slump test to confirm the concrete is within the slump tolerance range. If the slump is outside the tolerance range, reject the load. If an adjustment is made at the concrete production facility, perform a slump test on the next load to ensure the concrete is within the slump tolerance range. Do not place concrete represented by slump test results outside of the tolerance range. Include water missing from the water storage tanks upon arrival at the project site in the jobsite water added.~~ **Sample Location:** Obtain acceptance samples from the point of final placement.

Where concrete buckets are used to discharge concrete directly to the point of final placement or into the hopper of a tremie pipe, samples will be obtained from the discharge of the bucket. When the concrete is discharged directly from the mixer into the bucket and the bucket is discharged within 20 minutes, samples may be obtained from the discharge of the mixer.

Where conveyor belts, troughs, pumps, or chutes are used to transport concrete directly to the point of final placement or into the hopper of a tremie pipe, samples will be obtained from the discharge end of the entire conveyor belt, trough, pump, or chute system.

Where concrete is placed in a drilled shaft or other element using a tremie pipe and a concrete pump, samples will be obtained from the discharge of the pump line at the location of the tremie hopper.

For all other placement methods, prior to each placement, obtain Department approval for sampling at the discharge of the mixer in lieu of sampling at the point of final placement. Submit the sampling correlation procedure to the Engineer for approval prior to the placement of the concrete. Once the comparative sampling correlation is approved by the Engineer, apply this correlation to the plastic properties tolerances for samples obtained from the discharge of mixer.

Where a concrete pump is used to deposit concrete directly into a drilled shaft which is a wet excavation without the use of a tremie, or other applications as approved by the Engineer, ensure the discharge end of the pump line remains immersed in the concrete at all times after starting concrete placement.

SUBARTICLE 346-7-7 is deleted.

~~**346-7.7 Sample Location:** Obtain acceptance samples from the point of final placement.~~

~~Where concrete buckets are used to discharge concrete directly to the point of final placement or into the hopper of a tremie pipe, samples will be obtained from the discharge of the bucket. When the concrete is discharged directly from the mixer into the bucket and the bucket is discharged within 20 minutes, samples may be obtained from the discharge of the mixer.~~

~~Where conveyor belts, troughs, pumps, or chutes are used to transport concrete directly to the point of final placement or into the hopper of a tremie pipe, samples will be obtained from the discharge end of the entire conveyor belt, trough, pump, or chute system.~~

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~~Where a concrete pump is used to deposit concrete directly into a drilled shaft which is a wet excavation without the use of a tremie, or other applications as approved by the Engineer, ensure the discharge end of the pump line remains immersed in the concrete at all times after starting concrete placement.~~