ORIGINATION FORM
Proposed Revisions to the Specifications

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

Date: 26 October 2016 **Specification Section:** 930

Originator: Timothy J. Ruelke **Articles/Subarticles:** 930-4.4

Telephone: (352)955-6620

email: timothy.ruelke@dot.state.fl.us

Will the proposed revision involve Design Standard Index changes? **Yes** ○ **No** ●

Roadway Design staff contacted (name):

Structures Design staff contacted (name):

Will the proposed revision involve PPM changes? **Yes** ○ **No** ●

Roadway Design staff contacted (name):

Will the proposed revision involve CPAM changes? **Yes** ○ **No** ●

Construction staff contacted (name):

Will the proposed revision involve Pay Item changes? **Yes** ○ **No** ●

Estimates staff contacted (name):

Will the proposed revision involve SDG changes? **Yes** ○ **No** ●

Structures staff contacted (name):

Will the proposed revision involve APL changes? **Yes** ○ **No** ●

Product Evaluation staff contacted (name):

Will the proposed revision involve Material Manual changes? **Yes** ○ **No** ●

State Materials Office staff contacted (name):

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?

Added revisions will allow clarification to the specification

Summary of the changes:

Update of the specification will allow clarity to the specification, based on input from Industry, Construction Office, and the District Offices. For additional information contact Mike Bergin at 352.955.6666

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.

Dan Hurtado 850-414-4130 dan.hurtado@dot.state.fl.us Debbie Toole 850-414-4114 deborah.toole@dot.state.fl.us

Frances Thomas 850-414-4101 frances.thomas@dot.state.fl.us Olivia Townsend 850-414-4303 olivia.townsend@dot.state.fl.us

Florida Department of Transportation

RICK SCOTT
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

JIM BOXOLD
SECRETARY

M E M O R A N D U M

DATE: November 10, 2016

TO: Specification Review Distribution List

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

SUBJECT: Proposed Specification: **9300400 Materials for Concrete Repair.**

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

This change was proposed by Donnie Bagwell of the State Materials Office (SMO) to update 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 **December 8, 2016,** may not be considered. Your input is encouraged.

DH/dt
Attachment

MATERIALS FOR CONCRETE REPAIR.
(REV 10-27-16)

ATICLE 930-4 is deleted and the following substituted:

930-4 Materials for Repair of Predominately Horizontal Surfaces.

930-4.1 General: This material is intended to be used to repair concrete where the area to be treated will be on a horizontal surface. Examples of the type of locations for these materials are bridge decks, portland cement concrete pavements and other locations required by the Contract Documents. Follow the manufacturer's recommendations for preparing the surfaces, mixing, placing, and curing the repair material unless otherwise directed in the Contract Documents.

930-4.2 Classification: The materials to be considered under this classification shall meet the following requirements:

930-4.2.1 Rapid Hardening: Moderate compressive strength for repairing concrete with an in-place compressive strength less than or equal to 4,000 psi.

930-4.2.2 Very Rapid Hardening: High compressive strength for repairing concrete with an in-place compressive strength greater than 4,000 psi. This material may be used in lieu of ~~R~~rapid ~~H~~hardening materials.

930-4.3 Physical Properties: The repair material shall meet or exceed the physical properties stated in Table 1 as determined by the specified test methods.

Table 1 - Physical Properties of Repair Materials for Horizontal Surfaces			
Requirement	Test Method	Rapid Hardening	Very Rapid Hardening
Minimum Compressive Strength, psi			
3 hours	ASTM C39* or ASTM C109*	N/A	2,000
24 hours		2,000	4,000
7 days		4,000	6,000
28 days		Greater than or equal to strength at 7 days.	
Maximum Length Change, %			
Allowable expansion at 28 days when water cured compared to length at one day	ASTM C157**	0.12	0.12
Allowable shrinkage at 28 days when air cured compared to length at one day		-0.12	-0.12
Allowable difference between increase in water and decrease in air		0.20	0.20
Minimum Slump (Concrete), inches	ASTM C143***	3	3
Minimum Flow (Mortar), %	ASTM C1437***	100	80
Time of Setting (Initial), minutes	ASTM C191* or ASTM C403*	Minimum 30	10 to 29

Table 1 - Physical Properties of Repair Materials for Horizontal Surfaces			
Coefficient of Thermal Expansion, in/in/°F	ASTM C531* or AASHTO T336	5.0×10^{-6} to 9.0×10^{-6}	5.0×10^{-6} to 9.0×10^{-6}
Minimum Bond Strength by Slant Shear, psi			
24 hours	FM 5-587	400	450
7 days		Greater than or equal to strength at 24 hours.	
Maximum Allowable Total Chlorides lbs/yd^3	FM 5-516	0.40	

* as applicable
** Make and cure the test specimens in accordance with ASTM C-157, except omit the curing period in Section 10.3; however both 11.1.1 and 11.1.2 shall apply for 28 day curing period.
*** Testing for flow/slump will be completed in 5 plus or minus 1/2 minute~~s~~ after the start of mixing liquid with the ~~R~~rapid ~~H~~hardening materials or 15 plus or minus 1/2 minute~~s~~ after mixing the liquid with the ~~V~~very ~~R~~rapid ~~H~~hardening materials.

930-4.4 Specimen Preparation:

930-4.4.1 Flow/Slump: Testing for flow/slump will be completed in 15 minutes, plus or minus 1/2 minute~~s~~, after the start of mixing liquid with the ~~R~~rapid ~~H~~hardening materials or ~~1~~5 minutes, plus or minus 1/2 minute~~s~~, after mixing the liquid with the very rapid hardening materials.