Florida Department of Transportation

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GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

MIKE DEW
SECRETARY

November 3, 2017

Khoa Nguyen
Director, Office of Technical Services
Federal Highway Administration
3500 Financial Plaza, Suite 400
Tallahassee, Florida 32312

Re: State Specifications Office
Section: **938**
Proposed Specification: **9380402 Duct Filler for Post-Tensioned Structures.**

Dear Mr. Nguyen:

We are submitting, for your approval, two copies of the above referenced Supplemental Specification.

The changes are proposed by Donnie Bagwell of the State Materials Office to update the language for clarification.

Please review and transmit your comments, if any, within two weeks. Comments should be sent via email to dan.hurtado@dot.state.fl.us.

If you have any questions relating to this specification change, please call me at 414-4130.

Sincerely,

Signature on file

Dan Hurtado, P.E.
State Specifications Engineer

DH/dt
Attachment
cc: Florida Transportation Builders' Assoc.
State Construction Engineer

DUCT FILLER FOR POST-TENSIONED STRUCTURES.
(REV ~~9-13-17~~10-30-17)

SUBARTICLE 938-4.2.2 is deleted and the following substituted:

938-4.2.2 Laboratory Testing: The grout shall meet or exceed the specified physical properties stated herein as determined by the following standard and modified ASTM and FM test methods conducted at normal laboratory temperature (65°F-90°F) and conditions. Use the midrange of the water content indicated in the manufacturer's technical data sheet to produce the time of efflux shown in Table 938-1.

Table 938-1		
Property	Test Value	Test Method
Total Chloride Ions	Max. 1.0 lbs/yd^3	FM 5-516
Gradation	99% passing the No. 50 95% passing the No. 100 90% passing the No. 170	ASTM C136*
Hardened Height Change @ 24 hours and 28 days	0.0% to + 0.2%	ASTM C1090**
Expansion	≤ 2.0% for up to 3 hours	ASTM C940
Wet Density - Laboratory	Report maximum and minimum obtained test value lb/ft^3	ASTM C138
Wet Density - Field	Report maximum and minimum obtained test value lb/ft^3	ASTM C138 or ASTM D4380
Compressive Strength 28 day (Average of 3 cubes)	≥7,000psi	ASTM C942
Initial Set of Grout	Min. 3 hours Max. 12 hours	ASTM C953
Time of Efflux immediately after mixing	Max. 12 seconds	ASTM C939
Bleeding @ 3 hours	0.0 percent	ASTM C940***
Pressure Induced Bleeding	0.0 percent	ASTM C1741
Surface Resistivity@ 28 days	≥16 KOhms-cm	~~FM 5-578~~AASHTO T358
Relative Viscosity, RV_f, determined from Dynamic Sheer Rheometry	< 1.15	FM 5-605

*Use ASTM C117 procedure to determine the percent passing after washing the sieve.
**The time of efflux is the time to fill a one liter container placed directly under the flow cone. Modify the ASTM C939 test by filling the cone to the top instead of to the standard level.
***Modify ASTM C940 to conform with the wick induced bleed test as follows:
(a) Use a wick made of a 20 inch length of ASTM A416 seven wire 0.5 inch diameter strand. Wrap the strand with 2 inch wide duct or electrical tape at each end prior to cutting to avoid splaying of the wires when it is cut. Degrease (with acetone or hexane solvent) and wire brush to remove any surface rust on the strand before temperature conditioning.
(b) Mix the conditioned dry ingredients with the conditioned mixing water and place 800 ml of the resulting grout

Table 938-1		
Property	Test Value	Test Method
into the 1,000 ml graduate cylinder. Measure and record the volume of the grout. (c) Completely insert the strand into the graduated cylinder. Center and fasten the strand so it remains essentially parallel to the vertical axis of the cylinder. Measure and record the level of the top of the grout. (d) Calculate the bleed water, if any, at the end of the 3 hour test period and the resulting expansion per the procedures outlined in ASTM C940, with the quantity of bleed water expressed as a percent of the initial grout volume. Note if the bleed water remains above or below the top of the original grout height. Note if any bleed water is absorbed into the specimen during the test.		

SUBARTICLE 938-4.5 is deleted and the following substituted:

938-4.5 Repair Applications: Repair applications are used to augment grouting operations which did not completely fill the duct or anchorage. For new construction, repairs may be made with the same filler approved for use in the tendon as long as the volume of the void is less 0.5 gal. In all other cases, use a non-sanded grout meeting the requirements of 938-4.2 and 938-4.3 that meets or exceeds 16 KOhm-cm at 28 days when tested in accordance with ~~FM 5-578~~AASHTO T358. Each sieve may be washed and dried before weighing in accordance with the procedure in ASTM C117 modified for sieve size.

DUCT FILLER FOR POST-TENSIONED STRUCTURES.
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