Florida Department of Transportation

RON DESANTIS
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

KEVIN J. THIBAULT, P.E.
SECRETARY

June 25, 2020

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: **9380301 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 Richard DeLorenzo from the State Materials Office to update tables and language to reflect new Florida Method FM5-619 to the Standard Specification.

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

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

Sincerely,

Signature on file

Daniel Strickland, P.E.
State Specifications Engineer

DS/dh
Attachment
cc: Florida Transportation Builders' Assoc.
State Construction Engineer

DUCT FILLER FOR POST-TENSIONED STRUCTURES
(REV 2-27-20)

ARTICLE 938-3 is deleted and the following substituted:

938-3 General Requirements.

938-3.1 Grout: Grouts shall exhibit thixotropic properties and shall be prepackaged in clearly labeled moisture proof containers. The containers shall indicate application type, date of manufacture, LOT number and mixing instructions. The manufacturer's Quality Control Data Sheet for each lot number and shipment sent to the job site shall be provided to the Contractor ~~by the grout supplier~~ and submitted to the Engineer.

938-3.2 Flexible Filler - Microcrystalline Wax: The flexible filler shall be a petroleum based microcrystalline wax delivered to the project site in clearly labeled prepackaged containers and stored in accordance with the manufacturer's recommendations as applicable for the particular project. ~~A~~The manufacturer's Quality Control Data Sheet ~~indicating compliance with Table 938-2~~ for each shipment sent to the job site shall be ~~submitted~~provided to the Contractor and ~~furnished~~submitted to the Engineer.

SUBARTICLE938-4.2.2 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. Prepare all laboratory test specimens using 110 percent of the maximum water allowed by the manufacturer unless otherwise noted in Table 938-1. Tests A, B, N, and O will be conducted by the Department.

Table 938-1

Test ID	Property	Test Value	Test Method
A	Total Chloride Ions	Max. 1.0 lb~~s~~/yd^3	FM 5-516 (1)*
B	Total Sulfate Ions	Max. 30 ppm	FM 5-618 (1)*
C	Gradation	99% passing the No. 50 95% passing the No. 100 90% passing the No. 170	ASTM C136(2)**
D	Hardened Height Change @ 24 hours and 28 days	0.0% to + 0.2%	ASTM C1090
E	Expansion	≤ 2.0% for up to 3 hours	ASTM C940
F	Wet Density - Laboratory	Report maximum and minimum obtained test value lb/ft^3	ASTM C138

Table 938-1			
Test ID	Property	Test Value	Test Method
G	Wet Density - Field	Report maximum and minimum obtained test value lb/ft^3	ASTM C138 or ASTM D4380
H	Compressive Strength 28 day (Average of 3 cubes)	≥7,000psi	ASTM C942
I	Initial Set of Grout	Min. 3 hours Max. 12 hours	ASTM C953
J	Time of Efflux immediately after mixing	Max. 12 seconds	ASTM C939(3)***
K	Bleeding @ 3 hours	0.0 percent	ASTM C940(4)****
L	Pressure Induced Bleeding	0.0 percent	ASTM C1741
M	Surface Resistivity@ 28 days	≥16 ~~KOhms~~kOhms-cm	AASHTO T358
N	Relative Viscosity, RV_f, determined from Dynamic Sheer Rheometry	< 1.15	FM 5-605
O	Inclined Tube Test	~~< 0.3% (@3 hours)~~	~~EN 445~~FM5-619
	Amount of Bleed	≤ 0.0%	
	Allowable Difference in Moisture	≤ 2.0%	
	Penetration at 500 psi	≤ 1 mm	
	(1)*Obtain test sample from upper vent of inclined tube test specimen after 7 days curing. (2)**Use ASTM C117 procedure to determine the percent passing after washing the sieve. (3)***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. Use the midrange of the water content indicated in the manufacturer's technical data sheet to produce the time of efflux. (4)****Use ASTM C940 to conform with the wick induced bleed test as modified by the Post-Tensioning Institute specification PTI M55.1-12.		

SUBARTICLE 938-5.2 is deleted and the following substituted:

938-5.2 Laboratory Testing: The wax shall meet 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-78°F) and conditions. Prepare and test all laboratory test specimens as noted in Table 938-2.

Table 938-2		
Property	Test Value	Test Method
Salt Fog – 168 hours@35°C	No corrosion	ASTM B117(1)*
Chlorides	≤ 50 ppm (total)	ASTM D512(2)**
Sulfate	≤ 100 ppm	ASTM D516(2)**
Congealing Point	≥ 65°C	ASTM D938
Cone Penetration at 25°C	≤ 260 d-mm	ASTM D937

Bleeding at 40°C	≤ 0.5%	ASTM D6184
Resistance to Oxidation 100 hours at 100°C	≤ 0.03 MPa	ASTM D942
Kinematic Viscosity at 100°C	10 – 30mm^2/s	ASTM D445

(1)*Test sample consists of a 4 inch x 6 inch steel panel blast cleaned to a NACE surface preparation SP5 or equivalent, with a 2 to 2.5 mil surface profile. The plate is covered with a layer of wax equivalent to 0.5 grams wax per square inch of panel.

(2)**Prepare sample in accordance with NF M07-023, sections 6a through 6c or equivalent. Other analytical methods are acceptable as long as equivalency to the above methods has been established by the Department.

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