Florida Department of Transportation

RICK SCOTT
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

ANANTH PRASAD, P.E.
SECRETARY

January 10, 2014

Chad Thompson
Programs Operations Engineer
Federal Highway Administration
545 John Knox Road, Suite 200
Tallahassee, Florida 32303

Re: State Specifications and Estimates Office
Section **925**
Proposed Specification: **9250000 Curing Materials for Concrete.**

Dear Mr. Thompson:

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

These changes were proposed by Timothy Ruelke of the State Materials Office to update the language for current construction practice.

Please review and transmit your comments, if any, within two weeks. Comments should be sent via email to SP965DS or daniel.scheer@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 Scheer, P.E.
State Specifications Engineer

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

CURING MATERIALS FOR CONCRETE.
(REV ~~9-11-13~~*1-10-14*)

SECTION 925 is deleted and the following substituted:

SECTION 925
CURING MATERIALS FOR CONCRETE

925-1 Burlap.

Burlap for curing concrete shall consist either of two layers, each weighing 10 to 18 ounces/10 square feet, or of four layers, each weighing 6 to 7 ounces/10 square feet. Burlap which has been used as a container for sugar shall not be used. Burlap that is being used for the first time shall be thoroughly washed in order to remove starches used in sizing the material. Burlap shall be furnished in strips of at least 3 feet wide and shall be at least 3 feet longer than the width of surface to be covered.

925-2 Membrane-*Forming* Curing Compound.

925-2.1 General: Membrane-*forming* curing compound shall conform to requirements of ~~ASTM C309 (Type 1 for clear compound and Type 2 for white-pigmented compound), and the following additional requirements:~~*ASTM C309 and the following requirements*~~.~~*:*

Requirement	*Test Method*	*Test Value*
Water Loss@72 hours	*ASTM C156*	*0.55 kg/m^2*
Deleterious Reaction with Concrete	*ASTM C309*	*None*
Reflectance	*ASTM E1347*	*60% minimum**
Drying Time	*ASTM C309*	*4 hours maximum*
Non-Volatile Content	*ASTM D1644 (Method A)*	*(informational)*
Density, lbs/gal	*ASTM D1475*	*(informational)*
**Type 2 (White) compounds only.*		

The membrane-*forming* curing compound shall be of a consistency suitable for spraying at temperatures prevalent at the time of ~~construction operations~~*application*, and which forms a continuous, uniform film. It shall be free from precipitated matter caused by conditions of storage or temperature. ~~The compound shall be relatively nontoxic~~*meet the requirements of ~~Section 6.~~* Thorough*ly* agita~~tion~~*te* ~~shall be performed~~*the curing compound in accordance with the manufacturer's recommendations* prior to shipment from manufacturer's plant and prior to use at job site.

Curing compound delivered to the job*site* ~~in drums~~ shall be in the manufacturer's original container~~,~~ *and clearly* labeled with the *following information:*

(a) manufacturer's name~~, plant location, grade designation of compound,~~
(b) product name (trade name)
(c) type
(d) batch or LOT number~~, and quantity.~~

(e) date of manufacture

~~Curing compound delivered in bulk shall be supplied from and delivered to storage tanks designed to provide thorough agitation by means of compressed air.~~

925-2.2 Product Acceptance: *Acceptance of membrane-forming curing compound shall be based on the product being listed on the Departments Qualified Products List (QPL).*

925-2.2.1 Qualified Products List: ~~*All membrane-forming curing compounds shall be one of the products listed on the Department's Qualified Products List (QPL).*~~ *Manufacturers seeking evaluation of their product* ~~*shall*~~*must submit an application in accordance with Section 6*~~.~~ *and* ~~*I*~~*include* ~~*with the submittal,*~~ *product data sheets, material safety data sheets (MSDS) and certified test reports from an independent laboratory showing the product meets the requirements of this* ~~*s*~~*Section.* ~~*when*~~ ~~*t*~~*Test*~~*ed*~~*ing in accordance with the National Transportation Product Evaluation Program (NTPEP) Project Work Plan for the Laboratory Testing of Liquid Membrane-Forming Compounds for Curing Concrete shall be acceptable as independent laboratory data. Include an Infrared Spectrophotometry (IR) Scan and a certification stating the nominal minimum percentage of non-volatile material for the product formulation. Deviation of the non-volatile material below this certified value shall be considered a change in formulation and shall be grounds for removal from the QPL.* ~~*Independent laboratories must be accredited by the AASHTO Accreditation Program (AAP). The laboratory must pProvide verification to the State Materials Office (SMO) verification that any and all deficiencies from the most recent AAP inspection have been corrected.*~~

925-2.2.2 Certification: *Prior to use, the Contractor shall provide* ~~*to*~~ *the Engineer* ~~*withmanufacturer*~~ *a certification from the manufacturer* ~~*of the curing compound,*~~ *conforming to the requirements of Section 6 that the requirements of this Section are met.* ~~*The certification shall conform to the requirements of Section 6.*~~

~~**925-2.2 Sampling:** Samples shall be obtained as specified in ASTM C309 with the following exception. Take one sample for each Lot, batch, or other unit of production representing each 2,200 gallons or fraction there of. Filled containers, represented by the samples shall be sealed and marked by the sampling agency for later identification and correlation. Each sample shall be at least 1 quart. Allow fourteen days for completion of the tests after arrival of the sample in the laboratory.~~

925-2.3 ~~Storage~~*Product Life*: ~~Curing compound that has been tested and stored for longer than six months but less than one year shall be retested prior to use.~~ *Store the curing compound in accordance with the manufacturer's recommendations. Curing* ~~*C*~~*c*ompound*s* ~~that has~~ *not* ~~been stored longer than~~ *used within* one year *of the date of manufacture* shall not be incorporated into the work. ~~*Product shall be stored in accordance with the manufactures recommendation.*~~

925-3 Sheet Materials.

925-3.1 General: Waterproof paper, polyethylene film and white burlap-polyethylene sheet, for curing concrete shall meet the requirements of ASTM C171, with the additional requirements for waterproof paper and for polyethylene film as shown below.

925-3.2 Additional Requirements for Waterproof Paper: The paper as prepared for use shall be in such dimensions that each unit as laid will extend at least 18 inches beyond the edges of the slab. If laid longitudinally, paper not manufactured in sizes which will provide this width shall be securely sewed or cemented together; the joints being sealed in such manner that they do not open up or separate during the curing period.

At the option of the Contractor, instead of the single longitudinal strip specified above, the blanket may be furnished in three strips; one strip being the neat width of the pavement, with two side strips.

925-3.3 Additional Requirements for Polyethylene Sheeting: The sheets, as prepared for use, shall be of such dimensions that each unit as laid will extend beyond the edges of the slab by at least twice the thickness dimension of the pavement edge, and the sheets shall overlap by at least 18 inches.

No sheet may be reused except after individual inspection and approval by the Engineer. Any sheets determined by the Engineer to be so damaged as to not afford the protection to the concrete in preventing moisture loss during the curing period will be rejected.

925-4 Certification.

For burlap or white burlap-polyethylene, the Contractor shall provide the Engineer a certification conforming to the requirements of Section 6 from the manufacturer confirming that the requirements of this Section are met. Each certification shall cover only one type of burlap or white burlap-polyethylene sheeting.

CURING MATERIALS FOR CONCRETE.
(REV 1-10-14)

SECTION 925 is deleted and the following substituted:

SECTION 925
CURING MATERIALS FOR CONCRETE

925-1 Burlap.

Burlap for curing concrete shall consist either of two layers, each weighing 10 to 18 ounces/10 square feet, or of four layers, each weighing 6 to 7 ounces/10 square feet. Burlap which has been used as a container for sugar shall not be used. Burlap that is being used for the first time shall be thoroughly washed in order to remove starches used in sizing the material. Burlap shall be furnished in strips of at least 3 feet wide and shall be at least 3 feet longer than the width of surface to be covered.

925-2 Membrane-Forming Curing Compound.

925-2.1 General: Membrane-forming curing compound shall conform to requirements of ASTM C309 and the following requirements:

Requirement	Test Method	Test Value
Water Loss@72 hours	ASTM C156	0.55 kg/m^2
Deleterious Reaction with Concrete	ASTM C309	None
Reflectance	ASTM E1347	60% minimum*
Drying Time	ASTM C309	4 hours maximum
Non-Volatile Content	ASTM D1644 (Method A)	(informational)
Density, lbs/gal	ASTM D1475	(informational)
*Type 2 (White) compounds only.		

The membrane-forming curing compound shall be of a consistency suitable for spraying at temperatures prevalent at the time of application, and which forms a continuous, uniform film. It shall be free from precipitated matter caused by conditions of storage or temperature. Thoroughly agitate the curing compound in accordance with the manufacturer's recommendations prior to shipment from manufacturer's plant and prior to use at job site.

Curing compound delivered to the jobsite shall be in the manufacturer's original container and clearly labeled with the following information:

(a) manufacturer's name
(b) product name (trade name)
(c) type
(d) batch or LOT number
(e) date of manufacture

925-2.2 Product Acceptance: Acceptance of membrane-forming curing compound shall be based on the product being listed on the Departments Qualified Products List (QPL).

925-2.2.1 Qualified Products List: Manufacturers seeking evaluation of their product must submit an application in accordance with Section 6 and include product data sheets, material safety data sheets (MSDS) and certified test reports from an independent laboratory showing the product meets the requirements of this Section. Testing in accordance with the National Transportation Product Evaluation Program (NTPEP) Project Work Plan for the Laboratory Testing of Liquid Membrane-Forming Compounds for Curing Concrete shall be acceptable as independent laboratory data. Include an Infrared Spectrophotometry (IR) Scan and a certification stating the nominal minimum percentage of non-volatile material for the product formulation. Deviation of the non-volatile material below this certified value shall be considered a change in formulation and shall be grounds for removal from the QPL.

925-2.2.2 Certification: Prior to use, the Contractor shall provide the Engineer a certification from the manufacturer conforming to the requirements of Section 6 that the requirements of this Section are met.

925-2.3 Product Life: Store the curing compound in accordance with the manufacturer's recommendations. Curing compounds not used within one year of the date of manufacture shall not be incorporated into the work.

925-3 Sheet Materials.

925-3.1 General: Waterproof paper, polyethylene film and white burlap-polyethylene sheet, for curing concrete shall meet the requirements of ASTM C171, with the additional requirements for waterproof paper and for polyethylene film as shown below.

925-3.2 Additional Requirements for Waterproof Paper: The paper as prepared for use shall be in such dimensions that each unit as laid will extend at least 18 inches beyond the edges of the slab. If laid longitudinally, paper not manufactured in sizes which will provide this width shall be securely sewed or cemented together; the joints being sealed in such manner that they do not open up or separate during the curing period.

At the option of the Contractor, instead of the single longitudinal strip specified above, the blanket may be furnished in three strips; one strip being the neat width of the pavement, with two side strips.

925-3.3 Additional Requirements for Polyethylene Sheeting: The sheets, as prepared for use, shall be of such dimensions that each unit as laid will extend beyond the edges of the slab by at least twice the thickness dimension of the pavement edge, and the sheets shall overlap by at least 18 inches.

No sheet may be reused except after individual inspection and approval by the Engineer. Any sheets determined by the Engineer to be so damaged as to not afford the protection to the concrete in preventing moisture loss during the curing period will be rejected.

925-4 Certification.

For burlap or white burlap-polyethylene, the Contractor shall provide the Engineer a certification conforming to the requirements of Section 6 from the manufacturer confirming that the requirements of this Section are met. Each certification shall cover only one type of burlap or white burlap-polyethylene sheeting.