



Florida Department of Transportation

RICK SCOTT
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

ANANTH PRASAD, P.E.
SECRETARY

December 16, 2014

Khoa Nguyen
Director, Office of Technical Services
Federal Highway Administration
545 John Knox Road, Suite 200
Tallahassee, Florida 32303

Re: State Specifications and Estimates Office
Section **971**
Proposed Specification: **9710303 Traffic Marking Materials**

Dear Mr. Nguyen:

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

The changes are proposed by Chester Henson of the State Roadway Design Office to clarify that the Taber Abrasion Test is per ASTM D4060.

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/ot

Attachment

cc: Florida Transportation Builders' Assoc.
State Construction Engineer

TRAFFIC MARKING MATERIALS(REV ~~11-5-12-16-14~~)

SUBARTICLE 971-3.3 is deleted and the following substituted:

971-3.3 Physical Requirements: The material shall meet the following criteria:

| Property | Test Method | Minimum | Maximum |
|---------------------------|------------------------------------|-------------------|---------|
| Density | ASTM D1475 | 13.5 ± 1.4 lb/gal | - |
| Viscosity at 77°F | ASTM D562 | 80 KU | 100 KU |
| Fineness of Grind | ASTM D1210 | 3(HS) | |
| Dry Opacity at 5 mils WFT | ASTM D2805 | 0.92 | - |
| Bleed Ratio | ASTM D969 | 0.95 | - |
| Flexibility | ASTM D522 Method B | Pass | - |
| Abrasion Resistance | 971-3.3.2 ASTM D4060 | Pass | - |

971-3.3.1 Set To Bear Traffic Time: The material shall set to bear traffic in not more than two minutes.

971-3.3.2 Abrasion Resistance: Test four samples ~~per LOT~~ using a Taber Abrader. The paint shall be applied to specimen plates using a drawdown blade having a clearance of ~~26-20~~ mils. ~~Air dry each sample for 30 minutes and bake at 220°F for 18 hours.~~ Clean with a soft brush and weigh each sample. Abrade samples for 1,000 cycles with *a combined load of* -500 g ~~labeled (arm plus auxiliary weight) weights on each arm~~ and CS-10 wheels. Clean the samples with a soft brush and weigh again. The average weight loss for the four plates shall not exceed ~~50-75~~ mg per plate.

971-3.3.3 Retroreflectivity: The white and yellow pavement markings shall attain an initial retroreflectance of not less than 300 mcd/lx·m² and 250 mcd/lx·m². The retroreflectance of the white and yellow pavement markings at the end of the six month service life shall not be less than 150 mcd/lx·m².

SUBARTICLE 971-4.3 is deleted and the following substituted:

971-4.3 Physical Requirements: The material shall meet the following criteria:

| Property | Test Method | Minimum | Maximum |
|---------------------------|--|--------------------|---------|
| Density | ASTM D1475 | 13.5 ± 0.37 lb/gal | N/A |
| Viscosity at 77°F | ASTM D562 | 80 KU | 100 KU |
| Fineness of Grind | ASTM D1210 | 3(HS) | |
| Dry Opacity at 5 mils WFT | ASTM D2805 | 0.92 | - |
| Bleed Ratio | ASTM D969 | 0.95 | - |
| Flexibility | ASTM D522 Method B | Pass | - |
| Abrasion Resistance | 971-4.3.2 <i>ASTM D4060</i> | Pass | - |

971-4.3.1 Set To Bear Traffic Time: The material shall set to bear traffic in not more than two minutes.

971-4.3.2 Abrasion Resistance: Test four samples ~~per LOT~~ using a Taber Abrader. The paint shall be applied to specimen plates using a drawdown blade having a clearance of ~~26-20~~ mils. ~~Air dry each sample for 30 minutes and bake at 220°F for 18 hours.~~ Clean with a soft brush and weigh each sample. Abrade samples for 1,000 cycles with *a combined load of 500 g labeled weight (arm plus auxiliary weight) on each arm* and CS-10 wheels. Clean the samples with a soft brush and weigh again. The average weight loss for the four plates shall not exceed ~~50-75~~ mg per plate.

971-4.3.3 Retroreflectivity: The white and yellow pavement markings shall attain an initial retroreflectance of not less than 300 mcd/lx·m² and 250 mcd/lx·m², respectively. The retroreflectance of the white and yellow pavement markings at the end of the six month service life shall not be less than 150 mcd/lx·m².

SUBARTICLE 971-7.1 is deleted and the following substituted:

971-7.1 General: The materials for pavement stripes and markings shall consist of white or yellow weather-resistant reflective film as specified herein. ~~The markings are classified as High Performance.~~ The pigment, glass spheres, and filler shall be well dispersed in the resin. However, the requirements delineated in this Specification and Section 713 shall apply. The material shall be free from all skins, dirt and foreign objects.

SUBARTICLE 971-8.3 is deleted and the following substituted:

971-8.3 Physical Requirements: The material shall meet the following criteria:

| Property | Test Method | Minimum | Maximum |
|----------------------|--------------------------------------|------------------|---------|
| Adhesion to Concrete | ASTM D4541, ASTM D7234 or ACI 503 | Concrete Failure | - |
| Hardness | ASTM D7735 Type D | 75 | - |
| Abrasion Resistance | 971-8.3.2 ASTM D4060 | Pass | - |

971-8.3.1 Set To Bear Traffic Time: The material shall set to bear traffic in not more than two minutes.

971-8.3.2 Abrasion Resistance: Test four samples ~~per LOT~~ using a Taber Abrader. The material shall be applied to specimen plates using a drawdown blade having a clearance of ~~26-15~~ mils. ~~Air dry each sample for 30 minutes and bake at 220°F for 18 hours.~~ Clean with a soft brush and weigh each sample. Abrade samples for 1,000 cycles with *a combined load of 500 g labeled weights (arm plus auxiliary weight) -on each arm* and CS-10 wheels. Clean the samples with a soft brush and weigh again. The average weight loss for the four plates shall not exceed ~~50-60~~ mg per plate.

971-8.3.3 Retroreflectivity: The white and yellow pavement markings shall attain an initial retroreflectance of not less than 450 mcd/lx·m² and not less than 350 mcd/lx·m², respectively. The retroreflectance of the white and yellow pavement markings at the end of the three year service life shall not be less than 150 mcd/lx·m².

TRAFFIC MARKING MATERIALS
(REV 12-16-14)

SUBARTICLE 971-3.3 is deleted and the following substituted:

971-3.3 Physical Requirements: The material shall meet the following criteria:

| Property | Test Method | Minimum | Maximum |
|---------------------------|--------------------|-------------------|---------|
| Density | ASTM D1475 | 13.5 ± 1.4 lb/gal | - |
| Viscosity at 77°F | ASTM D562 | 80 KU | 100 KU |
| Fineness of Grind | ASTM D1210 | 3(HS) | |
| Dry Opacity at 5 mils WFT | ASTM D2805 | 0.92 | - |
| Bleed Ratio | ASTM D969 | 0.95 | - |
| Flexibility | ASTM D522 Method B | Pass | - |
| Abrasion Resistance | ASTM D4060 | Pass | - |

971-3.3.1 Set To Bear Traffic Time: The material shall set to bear traffic in not more than two minutes.

971-3.3.2 Abrasion Resistance: Test four samples using a Taber Abrader. The paint shall be applied to specimen plates using a drawdown blade having a clearance of 20 mils. Clean with a soft brush and weigh each sample. Abrade samples for 1,000 cycles with a combined load of 500 g (arm plus auxiliary weight) on each arm and CS-10 wheels. Clean the samples with a soft brush and weigh again. The average weight loss for the four plates shall not exceed 75 mg per plate.

971-3.3.3 Retroreflectivity: The white and yellow pavement markings shall attain an initial retroreflectance of not less than 300 mcd/lx·m² and 250 mcd/lx·m². The retroreflectance of the white and yellow pavement markings at the end of the six month service life shall not be less than 150 mcd/lx·m².

SUBARTICLE 971-4.3 is deleted and the following substituted:

971-4.3 Physical Requirements: The material shall meet the following criteria:

| Property | Test Method | Minimum | Maximum |
|---------------------------|--------------------|--------------------|---------|
| Density | ASTM D1475 | 13.5 ± 0.37 lb/gal | N/A |
| Viscosity at 77°F | ASTM D562 | 80 KU | 100 KU |
| Fineness of Grind | ASTM D1210 | 3(HS) | |
| Dry Opacity at 5 mils WFT | ASTM D2805 | 0.92 | - |
| Bleed Ratio | ASTM D969 | 0.95 | - |
| Flexibility | ASTM D522 Method B | Pass | - |
| Abrasion Resistance | ASTM D4060 | Pass | - |

971-4.3.1 Set To Bear Traffic Time: The material shall set to bear traffic in not more than two minutes.

971-4.3.2 Abrasion Resistance: Test four samples using a Taber Abrader. The paint shall be applied to specimen plates using a drawdown blade having a clearance of 20 mils. Clean with a soft brush and weigh each sample. Abrade samples for 1,000 cycles with a combined load of 500 g (arm plus auxiliary weight) on each arm and CS-10 wheels. Clean the samples with a soft brush and weigh again. The average weight loss for the four plates shall not exceed 75 mg per plate.

971-4.3.3 Retroreflectivity: The white and yellow pavement markings shall attain an initial retroreflectance of not less than 300 mcd/lx·m² and 250 mcd/lx·m², respectively. The retroreflectance of the white and yellow pavement markings at the end of the six month service life shall not be less than 150 mcd/lx·m².

SUBARTICLE 971-7.1 is deleted and the following substituted:

971-7.1 General: The materials for pavement stripes and markings shall consist of white or yellow weather-resistant reflective film as specified herein. The pigment, glass spheres, and filler shall be well dispersed in the resin. However, the requirements delineated in this Specification and Section 713 shall apply. The material shall be free from all skins, dirt and foreign objects.

SUBARTICLE 971-8.3 is deleted and the following substituted:

971-8.3 Physical Requirements: The material shall meet the following criteria:

| Property | Test Method | Minimum | Maximum |
|----------------------|--------------------------------------|------------------|---------|
| Adhesion to Concrete | ASTM D4541, ASTM D7234 or ACI 503 | Concrete Failure | - |
| Hardness | ASTM D7735 Type D | 75 | - |
| Abrasion Resistance | ASTM D4060 | Pass | - |

971-8.3.1 Set To Bear Traffic Time: The material shall set to bear traffic in not more than two minutes.

971-8.3.2 Abrasion Resistance: Test four samples using a Taber Abrader. The material shall be applied to specimen plates using a drawdown blade having a clearance of 15 mils. Clean with a soft brush and weigh each sample. Abrade samples for 1,000 cycles with a combined load of 500 g (arm plus auxiliary weight) on each arm and CS-10 wheels. Clean the samples with a soft brush and weigh again. The average weight loss for the four plates shall not exceed 60 mg per plate.

971-8.3.3 Retroreflectivity: The white and yellow pavement markings shall attain an initial retroreflectance of not less than 450 mcd/lx·m² and not less than 350 mcd/lx·m², respectively. The retroreflectance of the white and yellow pavement markings at the end of the three year service life shall not be less than 150 mcd/lx·m².