Florida Department of Transportation

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GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

MIKE DEW
SECRETARY

January 2, 2018

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

Re: State Specifications Office
Section: **970**
Proposed Specification: **9700000 Materials for Retroreflective Pavement Markers and Bituminous Adhesive.**

Dear Mr. Nguyen:

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

The changes are proposed by Ed Cashman of the State Roadway Design Office to standardize the definition of RPM and align it with the MUTCD where RPM is defined as a Raised Pavement Marker. Additional changes have been made by Karen Byram of the State Product Evaluation Office to replace FM 5-566 with NTPEP testing.

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

MATERIALS FOR RAISED~~RETROREFLECTIVE~~ PAVEMENT MARKERS AND BITUMINOUS ADHESIVE
(REV 10-31-17~~10-16-17~~)

SECTION 970 is deleted and the following substituted:

970-1 Raised~~Retroreflective~~ Pavement Markers (RPMs).

~~All retroreflective pavement markers shall be one of the products listed on the Department's Approved Product List (APL).~~ Manufacturers seeking evaluation of their product must submit an application in accordance with Section 6 ~~and include independent testing showing the product meets the requirements of this Section and Section 990. The Department will test all RPMs in accordance with FM 5-566.~~along with performance test reports from the National Transportation Product Evaluation Program (NTPEP) showing that the product meets the requirements of this Section.

The RPM description shall be in order of type, color and retroreflective surface condition in accordance with ASTM D4280 and the following chart.

RPM Class				
Class	Description	Usage	Expected Normal Service	ASTM Surface Designation
B	Retroreflective~~Temporary/Permanent~~	Temporary/Permanent	Long life	H, hard abrasion resistant lens
D	Retroreflective~~Temporary/Permanent~~	Temporary	One month	Monodirectional yellow Bi-directional yellow

970-2 Performance Requirements.

970-2.1 Class B RPMs: The RPMs shall meet the performance requirements specified in ASTM D4280, Section 6.2, for luminous intensity, flexural strength, compressive strength, resistance to cracking, and thermal cycling, as modified herein.

970-2.1.1 Composition: The RPM shall consist of materials conforming to ASTM D4280.

970-2.1.2 Physical Requirements: The physical size of the RPM shall conform to the requirements of ASTM D4280. Laboratory and field samples for RPMs and bituminous adhesives shall meet the requirements of ASTM D4280 and include the following requirements:

The minimum area of each retroreflective face shall be 2.5 square inches. The minimum base size shall be 12 square inches.

970-2.1.3 Abrasion Resistant: Meet the coefficient of luminous intensity requirements of ASTM D4280 after abrasion.

970-2.1.4 In-Service Minimum Retroreflective Intensity: Class B retroreflective pavement markers shall retain a minimum coefficient of luminous intensity for 18 months of not less than 30% of the values shown in Table 1 of ASTM D4280, and a minimum luminous intensity of 0.2 cd/fc at the end of two years.

970-2.2 Class D RPMs:. ~~Meet the requirements of Section 990.~~

970-2.2.1 Body Requirements: Provide RPMs made of nonferrous material. RPM dimensions are based on an x and y axis where the y dimension is parallel to the centerline and the x axis is 90° to the y axis.

The base must be approximately 4 inches along the x axis and approximately 1 inch along the y axis.

The vertical wall must be a minimum of 4 inches long with a minimum height of 2 inches and a maximum height of 3 inches with retroreflective sheeting affixed to the upper portion of the vertical wall. The retroreflective sheeting must be a minimum of 0.25 inch in width and extend the full length of the vertical wall.

970-2.2.2 Color Requirements: The color of the body and the retroreflective strips must be yellow.

970-2.2.3 Flexibility and Deformation Resistance: The vertical wall of the tabs must be flexible to bend under normal traffic and resistant to permanent deformation for a minimum of one month.

970-2.2.4 Adhesion: Provide tabs that adhere to the pavement such that no tab dislodges.

970-2.2.5 Retroreflective Sheeting: Provide retroreflective sheeting of Type IV or greater and meet the requirements of Section 994.

970-2.2.6 Removability: Ensure the entire RPM is removable without damaging the asphalt surface.

970-3 Packaging and Labeling.

Shipment shall be made in containers which are acceptable to common carriers and packaged in a manner which ensures delivery in perfect condition. Each package shall be clearly marked with the APL number, name of the manufacturer, type, color, quantity enclosed and date of manufacture. Show the designation of the Class B marker in accordance with ASTM D4280.

970-4 Bituminous Adhesive for Class B Raised Pavement Markers.

970-4.1 General: Bituminous adhesive as recommended by the RPM~~marker~~ manufacturer shall be used for bonding the RPM~~markers~~ to the pavement.

970-4.2 Specific Requirements for Bituminous Adhesives: The bituminous adhesive shall meet the properties of adhesives per ASTM D4280 Section A1, including filler-free and filler alone properties.

970-4.3 Performance Requirements: The performance of the adhesive shall be determined in accordance with the test methods listed in ASTM D4280.

970-5 Product Acceptance on the Project.

Acceptance will be made in accordance with the requirements of Sections 102 and 706. ~~Manufacturers seeking evaluation of their product shall submit an application in accordance with Section 6.~~

MATERIALS FOR RAISED PAVEMENT MARKERS AND BITUMINOUS ADHESIVE (REV 10-31-17)

SECTION 970 is deleted and the following substituted:

970-1 Raised Pavement Markers (RPMs).

Manufacturers seeking evaluation of their product must submit an application in accordance with Section 6 along with performance test reports from the National Transportation Product Evaluation Program (NTPEP) showing that the product meets the requirements of this Section.

The RPM description shall be in order of type, color and retroreflective surface condition in accordance with ASTM D4280 and the following chart.

RPM Class				
Class	Description	Usage	Expected Normal Service	ASTM Surface Designation
B	Retroreflective	Temporary/Permanent	Long life	H, hard abrasion resistant lens
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970-2.2 Class D RPMs.

970-2.2.1 Body Requirements: Provide RPMs made of nonferrous material. RPM dimensions are based on an x and y axis where the y dimension is parallel to the centerline and the x axis is 90° to the y axis.

The base must be approximately 4 inches along the x axis and approximately 1 inch along the y axis.

The vertical wall must be a minimum of 4 inches long with a minimum height of 2 inches and a maximum height of 3 inches with retroreflective sheeting affixed to the upper portion of the vertical wall. The retroreflective sheeting must be a minimum of 0.25 inch in width and extend the full length of the vertical wall.

970-2.2.2 Color Requirements: The color of the body and the retroreflective strips must be yellow.

970-2.2.3 Flexibility and Deformation Resistance: The vertical wall of the tabs must be flexible to bend under normal traffic and resistant to permanent deformation for a minimum of one month.

970-2.2.4 Adhesion: Provide tabs that adhere to the pavement such that no tab dislodges.

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970-4.1 General: Bituminous adhesive as recommended by the RPM manufacturer shall be used for bonding the RPM to the pavement.

970-4.2 Specific Requirements for Bituminous Adhesives: The bituminous adhesive shall meet the properties of adhesives per ASTM D4280 Section A1, including filler-free and filler alone properties.

970-4.3 Performance Requirements: The performance of the adhesive shall be determined in accordance with the test methods listed in ASTM D4280.

970-5 Product Acceptance on the Project.

Acceptance will be made in accordance with the requirements of Sections 102 and 706.