

PAVEMENT MARKINGS, COATINGS, AND  
RECYCLED MATERIAL (MISCELLANEOUS)

**SECTION 970**  
**MATERIALS FOR RAISED RETROREFLECTIVE PAVEMENT**  
**MARKERS AND BITUMINOUS ADHESIVE**

**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	<del>Retroreflective Temporary/Permanent</del>	<u>Temporary/Permanent</u>	Long life	H, hard abrasion resistant lens
D	<del>Retroreflective Temporary/Permanent</del>	<u>Temporary</u>	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

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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.~~