



# Florida Method of Test For RAISED PAVEMENT MARKERS LABORATORY AND FIELD TEST

Designation: FM 5-566

## 1. SCOPE

- 1.1 This method list the requirements of laboratory tests and field evaluation procedures for raised retroreflective pavement markers (RPMs).
- 1.2 The method includes the requirements for all classes of raised retroreflective pavement markers: permanent and temporary.

**Note 1:** The value stated in SI units are to be regarded as standard. The values in parenthesis are for information only.

## 2. REFERENCES

### 2.1 ASTM Standards:

- D 4280 Standard Specification for Extended Life Type, Nonplowable, Prismatic, Raised, Retroreflective Pavement Markers.
- E 809 Standard Practice for Measuring Photometric Characteristics of Retroreflectors
- E 811 Standard Practice for Measuring Colorimetric Characteristics of Retroreflectors Under Nighttime Conditions

## 3. LABORATORY TESTS PROCEDURES

### 3.1 Flexural Strength

- 3.1.1 Condition markers in accordance with ASTM 4280, 9.2.1
- 3.1.2 Align marker with test equipment and apply load in accordance with ASTM 4280, 9.3.1.2 and 9.3.1.3.
- 3.1.3 Check marker for cracking or breakage.
- 3.1.4 Breakage or significant deformation per ASTM D 4280 constitutes a



failure.

### 3.2 Compressive Strength

- 3.2.1 Perform compressive test in accordance with ASTM 4280, 9.2.2.
- 3.2.2 Check marker for cracking or breakage.
- 3.2.3 Breakage or significant deformation per ASTM D 4280 constitutes a failure.

### 3.3 Coefficient of Luminous Intensity

- 3.3.1 Test markers in accordance with ASTM E 809
- 3.3.2 The Pre-test Conditioning of new marker includes preparing the reflective face of hard abrasion resistant lens Markers, Class B markers, in accordance with ASTM 4280, 9.5 prior to Test Procedure.

**Note 1:** No surface preparation required for Class A markers.

- 3.3.3 Pretest conditioning of markers removed from the field includes performing Test Procedure 3.3 without any cleaning of reflective face for initial reading. Perform a second reading after cleaning the reflective face with water and a soft cloth.
- 3.3.4 Measure the coefficient of luminous intensity in accordance with ASTM 4280, 9.2.1. As suggested by ASTM 4280, a 30.5-m (100-ft) test distance arrangement will take test precedence over shorter test distances. Average observed values for the coefficient of luminous intensity less than the values specified in Standard Specification Section 970 per each color constitutes a failure of the marker.

### 3.4 Color: Measure color in accordance with ASTM 4280, 9.4

### 3.5 Resistance to Cracking

- 3.5.1 Condition marker in accordance with ASTM 4280, 9.5.1.
- 3.5.2 Impact the reflective face of the marker in accordance with ASTM 4280, 9.5.1.1.
- 3.5.3 Check marker in accordance with ASTM 4280, 9.4.1.2.



3.5.4 Impact area shall exhibit only concentric cracks, any radial cracks constitutes a failure.

### 3.6 Resistance to Temperature Cycling

3.6.1 Condition the marker in accordance with ASTM 4280, 9.4.2

3.6.2 Inspect the marker in accordance with ASTM 4280, 9.4.2.1, any cracking or delamination constitutes a failure.

### 3.7 Number of Tests and Retests

3.7.1 The number of markers constituting a sample for each laboratory test is defined in accordance with ASTM 4280, Section 8. The sample size for field evaluation of new markers for APL evaluation is listed in Section 4.2.1 below. The sample size for project product quality control is five (5) markers.

3.7.2 Perform the tests in the order listed in accordance with ASTM 4280, Section 8.

3.7.3 Retest failed samples in accordance with ASTM 4280, Section 8.

## 4. FIELD EVALUATION - APPROVED PRODUCT LIST (APL) EVALUATION

### 4.1 Equipment

4.1.1 The equipment used for the evaluation of the laboratory tests and field evaluation shall be in accordance with ASTM 4280.

4.1.2 The equipment shall be used in accordance to the equipment manufacturer's instruction manuals.

### 4.2 Material Quantities and Labeling

4.2.1 Class A, markers: fifty (50) clear - blank makers.

4.2.2 Class B markers: One hundred fifty (150) clear - blank markers.

4.2.3 The manufacturer shall supply new markers from production line which have manufacturer's name and model number and other required designations in accordance with ASTM 4280, 4. Classification.

4.2.4 The manufacturer shall inscribe permanent unique marker numbers for



test data traceability on each marker.

#### 4.3 Roadway Type

4.3.1 The selected roadway for the field test shall be asphaltic concrete.

4.3.2 The selected roadway shall not have any restricted flow of traffic during the duration of the field evaluation.

#### 4.4 Average Daily Traffic Count (ADT)

4.4.1 ADT of 8,000 to 12,000 vehicles per lane.

4.4.2 Minimum of two unidirectional lanes.

#### 4.5 Application

4.5.1 The RPMs shall be installed in accordance with Standard Specifications Section 706.

4.5.2 The bituminous adhesive used shall be an APL product.

#### 4.6 Test Site

4.6.1 The field evaluation markers shall be installed in between and in-line with normally spaced permanent markers.

4.6.2 The test site shall be approved by the Product Evaluation Department.

#### 4.7 Duration of Test Evaluation

4.7.1 Class A (Temporary) markers - three (3) month field test.

4.7.2 Class B (Permanent) markers – two year field test.

#### 4.8 Pre-Field Tests

4.8.1 Each marker will be tested per Section 3.3 for the coefficient of luminous intensity

4.8.2. A random sample from the supplied markers will be taken for additional pre-tests. Each test listed in Section 3 above under Laboratory Test Procedures shall be conducted. The sample must pass all the pre-tests before approval for installing the markers for the field test is given.



- 4.8.3 The remaining markers from the laboratory test shall be installed on the approved field test site. The test site for Class A markers will be inspected once per month and ten (10) markers will be removed from the test site and tested in accordance with Section 3.3 listed above. The test site for Class B markers will be inspected every six months and twenty (20) markers will be removed from the test site and tested in accordance with Section 3.3 listed above.
- 4.8.4 The coefficient of luminous intensity shall be recorded for each month from the RPMs sampled from the test site. The values will be plotted and extrapolated to determine service life and durability based on Standard Specification 970.