

Special Specification 6037

Raised Pavement Markers for Seal Coat Project



1. DESCRIPTION

Furnish and install raised pavement markers.

2. MATERIALS

2.1. **Markers.** Furnish raised pavement markers meeting the requirements of the following Department Material Specifications:

- **Reflectorized Pavement Markers.** DMS-4200, "Pavement Markers (Reflectorized)," types I-A, I-C, I-R, II-A-A, and II-C-R.
- **Traffic Buttons.** DMS-4300, "Traffic Buttons," types I-A, I-C, I-R, II-A-A, II-C-R, W, Y and B. Round or oval unless otherwise specified in the plans.
- **Plowable Reflectorized Pavement Markers.** DMS-4210, "Snowplowable Pavement Markers" types I-A, I-C, I-R, II-A-A, and II-C-R.

The following are descriptions for each type of raised pavement marker:

- **Type I-A.** Type I-A must contain an approach face that retroreflects amber light. The body, other than the retro-reflective face must be yellow.
- **Type I-C.** Type I-C must contain an approach face that retroreflects white light. The body, other than the retro-reflective face must be white or silver-white.
- **Type I-R.** Type I-R must contain a trailing face that retro-reflects red light. The body, other than the retro-reflective face must be white or silver-white, except for I-R plowable markers which may be black.
- **Type II-A-A.** Type II-A-A must contain two retro-reflective faces (approach and trailing) each that retro-reflect amber light. The body, other than the retro-reflective faces, must be yellow.
- **Type II-C-R.** Type II-C-R must contain two retro-reflective faces, an approach face that retro-reflects white light and a trailing face that retro-reflects red light. The body, other than the retroreflective faces, must be white or silver-white.
- **Type W.** Type W has a white body and no reflective faces.
- **Type Y.** Type Y has a yellow body and no reflective faces.
- **Type B.** Must have a black body and no reflective faces.

2.2. **Adhesives.** Furnish adhesives that conform to the following requirements:

- DMS-6100, "Epoxy and Adhesives," Type II – Traffic Marker Adhesives.
- DMS-6130, "Bituminous Adhesive for Pavement Markers."
- The Contractor may propose alternate adhesive materials for consideration and approval by the Engineer.

2.3. **Sampling.** The Engineer will sample in accordance with Tex-729-I.

3. CONSTRUCTION

Remove existing raised pavement markers in accordance with Item 677, "Eliminating Existing Pavement Markings and Markers," (except for measurement and payment). Furnish raised pavement markers for each class from the same manufacturer.

When shown on the plans, prepare all surfaces in accordance with Item 678, "Pavement Surface Preparation for Markings." Ensure that the bond surfaces are free of dirt, curing compound, grease, oil, moisture, loose or unsound pavement markings, and any other material that would adversely affect the adhesive bond.

Establish pavement marking guides to mark the lateral location of raised pavement markers as shown on the plans and as directed. Do not make permanent marks on the roadway for the guides.

Place raised pavement markers in proper alignment with the guides. Acceptable placement deviations are shown on the plans.

Remove raised pavement markers placed out of alignment or sequence, as shown on the plans or stated in this specification, at Contractor's expense, in accordance with Item 677, "Eliminating Existing Pavement Markings and Markers," (except for measurement and payment).

Use the following adhesive materials for placement of reflectorized pavement markers, and traffic buttons unless otherwise shown on the plans:

- standard or flexible bituminous adhesive for applications on bituminous pavements.
- epoxy adhesive or flexible bituminous adhesive for applications on hydraulic cement concrete pavements.

Use epoxy adhesive for plowable reflectorized pavement markers.

Apply adhesives in sufficient quantity to:

- ensure that 100% of the bonding area of raised pavement markers is in contact with the adhesive, and
- ensure that raised pavement markers, except for plowable markers, are seated on a continuous layer of adhesive and not in contact with the pavement surface.

Apply adhesives in accordance with manufacturer's recommendations unless otherwise required by this Article. Apply bituminous adhesive only when pavement temperature and raised pavement marker temperature are 40°F or higher. Do not heat bituminous adhesive above 400°F. Machine agitate bituminous adhesive continuously prior to application to ensure even heat distribution.

- 3.1. **Machine-Mix Epoxy Adhesive.** Apply epoxy adhesive only when pavement temperature is 50°F or higher. Furnish raised pavement markers free of rust, scale, dirt, oil, grease, moisture, and contaminants that might adversely affect the adhesive bond.

Place raised pavement markers immediately after the adhesive is applied and ensure proper bonding. Do not use adhesives or any other material that impairs the functional retro-reflectivity of the raised pavement markers.

Provide a 30-day performance period that begins the day following written acceptance for each separate location. The date of written acceptance will be the last calendar day of each month for the RPMs installed that month for the completed separate project locations. This written acceptance does not constitute final acceptance.

Replace all missing, broken or non-reflective RPMs. Visual evaluations will be used for these determinations. Upon request, the Engineer will allow a Contractor representative to accompany the Engineer on these evaluations.

The Engineer may exclude RPMs from the replacement provisions of the performance, provided the Engineer determines that the failure is a result of causes other than defective material or inadequate installation procedures. Examples of outside causes are extreme wear at intersections, damage by snow or ice removal, and pavement failure.

Replace all missing or non-reflective RPMs identified during the performance period within 30 days after notification. The end of the performance period does not relieve the Contractor from the performance deficiencies requiring corrective action identified during the performance period.

4. MEASUREMENT

This Item will be measured by each raised pavement marker.

This is a plans quantity measurement Item. The quantity to be paid is the quantity shown in the proposal, unless modified by Article 9.2., "Plans Quantity Measurement." Additional measurements or calculations will be made if adjustments are required.

5. PAYMENT

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Reflectorized Pavement Marker," "Traffic Button," or "Plowable Reflectorized Pavement Marker" of the types specified. This price is full compensation for removing existing markers; furnishing and installing raised pavement markers; and equipment, materials, labor, tools, and incidentals.

No additional payment will be made for replacement of RPMs failing to meet the performance requirements.