SECTION 32 17 23.23

REFLECTORIZED PAVEMENT MARKERS (RPMs)

PART 1 - GENERAL

1.1 DESCRIPTION

This item shall govern for the furnishing and installing of raised reflectorized pavement markers (RPMs) at locations designated on the plans or as directed by the Engineer.

1.2 MEASUREMENT AND PAYMENT

A. Pavement markers will be measured as each pavement marker complete and in place.

B. The price shall be full compensation for furnishing all materials, all preparation and installation, all labor, equipment, tools and incidentals necessary to complete the work.

PART 2 – PRODUCTS

2.1 MATERIALS

A. The RPMs shall be conform to Item No. 672, Texas Department of Transportation's Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges; provided, however, that all buttons used on any one project shall be of the same material and same manufacture.

B. The base of the marker shall be flat (the deviation from a flat surface shall not exceed 1/16 inch), and designed to be bonded to either asphaltic or portland cement concrete pavement, with an approved adhesive meeting the requirements stated in Test Method TEX-611-J.

2.2 OPTICAL REQUIREMENTS

The specific intensity of each reflective surface shall not be less than the following values when tested at a 0.2 angle of divergence and when the incident light is parallel to the base of the marker.

Horz. Ent. Angle	Crystal	Amber	Red
4 degrees	3.00	2.00	0.75
20 degrees	1.50	1.00	0.30

A. ANGLE OF INCIDENCE: The angle of incidence is the angle formed by a ray from the light source to the marker, and normal to the leading edge of the marker face.

B. ANGLE OF DIVERGENCE: The angle of divergence is the angle formed by a ray from the light source to the marker, and the returned ray from the marker to the measuring receptor.

C. SPECIFIC INTENSITY: The specific intensity is the mean candle power of the reflected light at a given incidence and divergence angle for each foot candle at the reflector on a plane perpendicular to the incident light. (Test Method TEX-842-B)

2.3 STRENGTH REQUIREMENTS

The markers shall comply with the adhesion requirements of Test Method TEX-611-J. The marker shall withstand a falling-ball impact of 5 (five) feet without breaking, cracking or being significantly deformed when tested according to Test Method TEX-430-A.
The marker shall show no change in shape or color when subjected to the requirements of Test Method TEX-846-B. The temperature shall be 140° F with the marker in a vertical position.

2.4 MARKER TYPES

The color and number of reflective surfaces of the buttons or markers shall be as designated in the Plans and Specifications.

2.5 SAMPLING

Should any of the specimens selected for strength testing, as specified in the section, "Strength Requirements", fail to comply with the strength requirements of this specification; five (5) additional specimens will be tested. The failure of any one of these five (5) specimens shall be cause for the rejection of the entire lot or shipment represented by the sample.

PART 3 – EXECUTION

3.1 GENERAL

The RPMs shall be placed in accordance with the plans or as directed by the Engineer. The pavement surface shall be prepared by buffing, grinding, or other methods approved by the Engineer. After preparation, the surface must be free of dirt, grease, oil, moisture, loose unsound pavement, and any other material, which would adversely affect the bond of the adhesive. The wet epoxy or bituminous material shall be applied so that 100% of the bonding area of the button will be in contact and shall be of sufficient thickness so that the excess adhesive shall be forced out around the perimeter of the button. When the project is complete, the button shall be firmly bonded to the pavement. Lines formed by the buttons shall be true, and the entire installation shall present a neat appearance.

END OF SECTION