

**KANSAS DEPARTMENT OF TRANSPORTATION  
 SPECIAL PROVISION TO THE  
 STANDARD SPECIFICATIONS, EDITION 2007**

**Add a new SECTION in DIVISION 2200:**

**RAISED PAVEMENT MARKERS**

**1.0 DESCRIPTION**

This specification covers temporary raised pavement markers for lane marking and delineation. This includes the bid items Pavement Marking (Temporary) (Flexible Raised Pavement Marker) and Temporary Raised Pavement Markers for use on both Portland cement concrete and asphalt surfaces.

**2.0 REQUIREMENTS**

**a. General.**

(1) Provide temporary reflective markers as shown in the Contract Documents. The markers shall be readily visible at night, from a minimum of 300 feet, when viewed with high beam automobile headlamps. Prior to use, markers must be approved by the Engineer. The marker shall be the same color as the reflective elements. All markers shall be capable of sustaining 2000 direct wheel-over impacts at 60 mph without losing adhesion to the roadway or sustaining damage to the marker body.

(2) Provide Flexible temporary raised pavement markers which consist of an L-shaped flexible polyurethane body with prismatic reflective sheeting on both faces. The reflective sheeting shall be a minimum of 1 square inch spread over the 4" wide marker. The markers shall have minimum dimensions of 4 inches wide x 2 inches high with a 1 inch wide base leg. Thickness of the body shall be a minimum of 0.06 inches. The marker shall have an affixed pressure sensitive adhesive, protected by a release paper, for application to the pavement surface. Attach a clear flexible plastic cover to the vertical section of the marker to protect the reflective material during surfacing operations. The cover shall withstand the work and is easily removed after the operation. The markers shall not cause any damage to the automobile.

(3) Provide Rigid (Type I) temporary raised pavement markers constructed of traffic bearing high impact plastic with prismatic reflective faces. The base of the markers shall have minimum dimensions of 2.5 inches wide, 4 inches long and 0.4 inches high. The base of the marker shall be flat. Markers shall be reflectorized with one or more reflective faces on each side using either an acrylic retroreflector, or retroreflective sheeting. Each face shall contain a minimum of 0.38 square inches of reflective surface. The adhesive used shall not stain the pavement and will allow the markers to be easily removed without damage to the roadway surface. If the marker is self adhesive, it shall be precoated with an affixed pressure sensitive adhesive, protected by a release paper.

(4) Provide Rigid (Type II) or brick markers constructed of traffic bearing high impact plastic with prismatic reflective faces. The marker shall have minimum dimensions of 2.5 inches high, 7.5 inches wide and 13 inches long. The base of the marker shall be flat. Markers shall be reflectorized with two or more reflective faces on each side using either an acrylic retroreflector, or retroreflective sheeting. Each face shall contain a minimum of 3.75 square inches of reflective surface. The adhesive used will not stain the pavement and will allow the markers to be easily removed without damage to the roadway surface. If the marker is self adhesive, it shall be precoated with an affixed pressure sensitive adhesive, protected by a release paper.

**b. Retroreflectivity.** Provide markers in white or yellow which comply with the minimum requirements shown in **TABLE 1:**

<b>TABLE 1: RETROREFLECTIVITY REQUIREMENTS</b>	
<b>Color</b>	<b>Millicandelas/sq m/lux (min.)<sup>a</sup> (measured at 0.2° observation angle and 0° entrance angle)</b>
White	3.0
Yellow	1.8

<sup>a</sup> Flexible markers must meet these requirements before and after durability testing.

**c. Color.** Markers shall be white or yellow in color, solid throughout, and match the color of the lane line on which the marker will be placed under both daylight and nighttime conditions.

**d. Durability.** Flexible markers, as defined in **subsection 2.0a.(2)**, must withstand 2000 revolutions on a small-wheel circular track. 12 markers of each color will be tested. No more than 3 markers shall move from their original position during testing.

### **3.0 TEST METHODS**

**a. Retroreflectivity.** Test in accordance with ASTM E 809.

**b. Durability.** Test in accordance with ASTM E 660, with the following variations:

(1) Mount two opposite wheels with 11 x 6.00 x 5 nylon smooth non-pattern tread tires with a total load of 50 pounds on each tire. Maintain tire pressure at 25 psi. Mount the wheels perpendicular to the specimens and toe out 2° to produce a slight abrading action.

(2) Apply markers, according to the manufacturer's recommendations, to 6 inch diameter dense grade asphalt concrete cores, which have been compacted at 3000 psi for 2 minutes.

### **4.0 PREQUALIFICATION**

Manufacturers wishing to supply markers to KDOT projects must have their product tested by the AASHTO National Transportation Product Evaluation Program (NTPEP). Submit 12 flexible markers or 2 rigid markers of each color for which prequalification is requested, and an official copy of the NTPEP test report to the Engineer of Tests, Materials and Research Center, 2300 Van Buren, Topeka, KS 66611. Include evidence that the product offered is identical to that described in the test report, and information regarding the recommended adhesive, if any is required. Prequalification will be based on satisfactory compliance of NTPEP results and laboratory testing with **subsection 2.0**.

### **5.0 BASIS OF ACCEPTANCE**

Prequalification as required by **subsection 4.0**.

Receipt and approval of a Type C certification as specified in **DIVISION 2600**.

Visual inspection for condition and dimensional requirements.