

**993 REFLECTOR UNITS FOR GUARDRAIL.  
(REV 9-21-04) (FA 11-18-04) (7-05)**

ARTICLE 993-5 (Page 947) is deleted and the following substituted:

**993-5 Reflector Units for Guardrail and Concrete Barrier Wall.**

**993-5.1 General:** Reflector units for use on guardrail and concrete barrier wall installations shall consist of a hermetically sealed acrylic plastic prismatic reflex reflector or retroreflective sheeting permanently adhered to 0.040 inch [1.0 mm] thick sheet aluminum of 6061-T6 (ASTM B 209) [(ASTM-B 209M)] prepared in accordance with recommendations of the sheeting manufacturer.

**993-5.2 Reflector Element:**

**993-5.2.1 Acrylic Plastic:** These reflectors shall be of acrylic plastic meeting the requirements of Federal Specification L-P-380, Type I, Class 3. The manufacturer shall stipulate the raw material used in the compound in order that the Department may readily check the suitability of the raw material.

The reflector shall consist of a clear transparent, or translucent amber plastic face, herein referred to as the lens, with a heat sealable plastic coated metallic foil back fused to the lens under heat and pressure around the entire perimeters of the lens to form a unit permanently sealed against dust, water and water vapor.

The reflector lens shall consist of a smooth front surface, free from projections or indentations and the necessary identification markings, and a rear surface having a prismatic configuration such that it will affect total internal reflection of light.

When the reflectors are tested as specified in 993-1.3 for Type A Delineators, the specific intensity of the colorless reflectors shall not be less than 119 at 0 degree entrance angle and not less than 47 at 20 degree entrance angle, and the specific intensity of the amber reflectors shall be not less than 71 at 0 degree entrance angle and not less than 28 at 20 degree entrance angle.

**993-5.2.2 Retroreflective Sheetings:** Retroreflective sheeting for these reflector units shall be Type III, IV, V, or VII meeting the requirements of Section 994. The sheeting shall be yellow or white, depending on the locations of use for each. The minimum reflective surface area of the marker shall be 9 inch<sup>2</sup> [5,805 mm<sup>2</sup>]. The adhesive backing for these markers shall be Class I.

**993-5.3 Installation:** Markers shall be installed at locations identified in the plans and in accordance with the Design Standards, Index Nos. 400 and 410.