

# EXPECTED IMPLEMENTATION JANUARY 2014

## 971 TRAFFIC MARKING MATERIALS.

(REV 7-29-13) (FA 8-6-13) (1-14)

ARTICLE 971-7 (Pages 1100 – 1101) is deleted and the following is substituted:

### 971-7 Permanent Tape Materials for Traffic Stripes and Markings.

**971-7.1 General:** The materials for pavement stripes and markings shall consist of white or yellow weather-resistant reflective film as specified herein. The markings are classified as High Performance. The pigment, glass spheres, and filler shall be well dispersed in the resin. However, the requirements delineated in this Specification and Section 713 shall apply. The material shall be free from all skins, dirt and foreign objects.

**971-7.2 Composition:** The pavement stripes and markings shall consist of high-quality plastic materials, pigments, and glass spheres uniformly distributed throughout their cross-sectional area, with a reflective layer of spheres embedded in the top surface.

**971-7.3 Skid Resistance:** The surface of the stripes and markings shall provide a minimum skid resistance value of 35 BPN when tested according to ASTM E303. Bike lane symbols and pedestrian crosswalks shall provide a minimum skid resistance value of 55 BPN.

**971-7.4 Thickness:** The QPL will list the specified thickness of each approved product.

**971-7.5 Durability and Wear Resistance:** When properly applied, the material shall provide neat, durable stripes and markings. The materials shall provide a cushioned resilient substrate that reduces sphere crushing and loss. The film shall be weather resistant and, through normal wear, shall show no significant tearing, rollback or other signs of poor adhesion. Durability is the measured percent of pavement marking material completely removed from the pavement. The pavement marking material line loss must not exceed 5.0% of surface area at the end of its service life.

**971-7.6 Conformability and Resealing:** The stripes and markings shall be capable of conforming to pavement contours, breaks and faults under traffic at pavement temperatures recommended by the manufacturer. The film shall be capable of use for patching worn areas of the same types of film in accordance with the manufacturer's recommendations.

**971-7.7 Tensile Strength:** The stripes and markings shall have a minimum tensile strength of 40 psi when tested according to ASTM D638. A rectangular test specimen 6 inches by 1 inch by 0.05 inches minimum thickness shall be tested at a temperature range of 40 to 80°F using a jaw speed of 0.25 inch/min.

**971-7.8 Elongation:** The stripes and markings shall have a minimum elongation of 25% when tested in accordance with ASTM D 638.

**971-7.9 Plastic Pull test:** The stripes and markings shall support a dead weight of 4 lb for not less than five minutes at a temperature range of 70 to 80°F. Rectangular test specimen size shall be 6 inches by 1 inch by 0.05 inches minimum thickness.

**971-7.10 Pigmentation:** The pigment shall be selected and blended to provide a material which is white or yellow conforming to standard highway colors through the expected life of the stripes and markings.

**971-7.11 Glass Spheres:** The stripes and markings shall have glass retention qualities such that, when at room temperature a 2 inches by 6 inches specimen is bent over a 0.5 inch diameter mandrel axis, a microscopic examination of the area on the mandrel shall show no more than 10% of the spheres with entrapment by the material of less than 40%. The bead adhesion shall be such that spheres are not easily removed when the film surface is scratched firmly with a thumbnail.

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**971-7.12 Retroreflectivity:** The permanent tape materials for traffic stripes and markings shall have a service life of five years. The materials shall attain an initial retroreflectance of not less than  $450 \text{ mcd/lx}\cdot\text{m}^2$  for white and contrast markings and not less than  $350 \text{ mcd/lx}\cdot\text{m}^2$  for yellow markings. The pavement stripes and markings shall retain a minimum retroreflectance for two years of not less than  $300 \text{ mcd/lx}\cdot\text{m}^2$  for white and contrast markings and not less than  $250 \text{ mcd/lx}\cdot\text{m}^2$  for yellow markings. The retroreflectance of the white, yellow and contrast pavement markings at the end of the five year service life shall not be less than  $150 \text{ mcd/lx}\cdot\text{m}^2$ .

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