

SECTION 965—PREFORMED THERMOPLASTIC PAVEMENT MARKINGS

965.1 DESCRIPTION—This work is the furnishing and installation of preformed thermoplastic pavement markings, of the type and color indicated.

965.2 MATERIAL—

(a) **General.** Provide materials from a source listed in [Bulletin 15](#). Certify materials as specified in [Section 106.03\(b\)3](#).

(b) **Thermoplastic.** AASHTO M 249, Type 1, except that the material is in a preformed state. Provide a material listed in [Bulletin 15](#). Furnish a material with a minimum initial skid resistance of 50 British Pendulum Number (BPN) for all crosswalks, stop lines, legends, or where indicated.

(c) **Glass Beads.** [Section 1103.14](#), Type A.

1. **Intermix.** Provide sufficient uncoated glass beads to comprise 30% of the marking material by mass (weight) and have a minimum of 80% rounds overall.
2. **Surface-Applied.** Moisture resistant coated with a maximum of 5% passing the 180 μm (No. 80) sieve and a minimum of 70% rounds per sieve and a minimum of 80% rounds overall.

965.3 CONSTRUCTION—

(a) **General.** At least 5 days before beginning work, provide the Inspector-in-Charge with a schedule of operations. In addition, provide the Inspector-in-Charge with the manufacturer's instructions for the installation of the materials, application temperatures, proper mixing techniques, and any other data to ensure the material is being properly installed.

(b) **Pretreatment.** For proper adhesion, perform surface preparation of the road surface and provide the pretreatment according to [Bulletin 15](#) or recommended by the manufacturer. Clean the roadway surface where the preformed thermoplastic pavement markings will be applied. Remove all surface treatment, laitance, curing compound, or any contaminants that would hinder adhesion. Clear any loose dirt and other debris from the application area. Surface preparation is incidental to the application of preformed thermoplastic pavement markings, except for the removal of pavement markings which is performed and paid for under [Section 963](#). Identify the location of the final pavement markings by applying spots on the pavement at 12 m (40-foot) intervals. The Inspector-in-Charge will approve the locations. Apply on dry pavement when the air and roadway temperatures are between 10 °C and 32 °C (50F and 90F) and when the wind speed is less than 32 km/h (20 miles per hours).

(c) **Application.** Apply markings, which have a minimum thickness of 3 mm \pm 0.1 mm (125 mils \pm 4 mils). A tolerance of \pm 6 mm (\pm 1/4 inch) from the indicated width will be allowed provided the variation is gradual and does not detract from the general appearance. Use a heat gun to fuse the material to the pavement. Heat the material as recommended by the manufacturer.

(d) **Glass Beads.** Surface apply glass beads as recommended by the manufacturer immediately after application of the markings. Uniformly distribute glass beads on the surface. Provide markings with an average minimum initial retroreflectivity of 300 mcd/m²/lux for white and 250 mcd/m²/lux for yellow. Under the direction and supervision of the Representative measure retroreflectivity with a 30-meter geometry retroreflectometer conforming to [ASTM E-1710](#) within 21 days after installation in accordance with [PTM No. 431](#).

(e) Defective Markings. Remove any markings placed incorrectly and replace them. Repair those markings, which after application and drying, are determined to be defective by the Inspector-in-Charge. Complete this work at no additional cost to the Department. Major problem areas and method of repair include the following:

- Insufficient thickness or line width, uneven cross-section—Prepare defective material by grinding or blast cleaning to remove a substantial amount of beads and the marking surface is roughened. Remove loose particles and debris with compressed air. Restripe the cleaned surface as specified in this specification.
- Inadequate retroreflectivity, glass bead coverage or retention—Remove defective markings and clean pavement surface, including 300 mm (1 foot) beyond each end of the affected area. Remove loose particles and debris with compressed air. Restripe the marking on the cleaned surface as specified in this specification.

(f) Guarantee. Where directed, remove and replace material that has not remained within close conformity to location or has not remained effective in performing useful service in accordance with [Section 107.16\(b\)](#) for a period of 180 days from the date of acceptance. The minimum acceptable service is as follows:

- **Longitudinal Markings.** 90% of material remains in each 305 m (1,000-foot) section of marking where the intersection unit is defined as material on an approach leg within 50 m (160 feet) of the intersection.
- **Transverse Markings, Legends, and Symbols.** 90% of material remains for each individual legend, symbol, crosswalk, or stop line.

965.4 MEASUREMENT AND PAYMENT—

- (a) **Line.** Meter (Linear Foot)
- (b) **Legend.** Each