

## **SECTION 713**

### **PERMANENT TAPE PAVEMENT MARKINGS**

#### **713-1 Description.**

Apply permanent tape pavement markings, in accordance with the Contract Documents.

#### **713-2 Materials.**

Use only materials listed on the Department's Approved Product List (APL) meeting the following requirements:

Permanent Tape ..... 971-1 and 971-7

The Engineer will take random samples of all material in accordance with the Department's Sampling, Testing and Reporting Guide schedule.

#### **713-3 Equipment.**

Use equipment that is mobile and maneuverable to the extent that straight lines can be followed and normal curves can be made in a true arc.

Ensure the mechanical applicator is equipped with film cut-off device and a measuring device that automatically and accumulatively measures the length of each line placed with an accuracy tolerance of plus or minus 2 percent. Tape may be placed by hand on short sections, 500 feet or less if the tolerances in dimensions and in alignment specified in 710-5 are met.

#### **713-4 Application.**

**713-4.1 General:** Remove existing pavement markings, such that scars or traces of removed markings will not conflict with new pavement markings by a method approved by the Engineer.

Before applying permanent tape, remove any material by a method approved by the Engineer that would adversely affect the bond of the tape.

Apply a primer, sealer or surface preparation adhesive of the type recommended by the manufacturer. Ensure the permanent tape adheres to the pavement surface.

Offset longitudinal lines at least 2 inches from construction joints on portland cement concrete pavement.

Apply permanent tape to dry surfaces only, and when the ambient air and surface temperature is at least 55°F and rising.

Apply permanent tape to the same tolerances in dimensions and in alignment specified in 710-5.

Apply permanent tape to the pavement by means approved by the Engineer.

Conduct field testing in accordance with FM 5-541. Take test readings representative of the pavement marking performance. Remove and replace permanent tape not meeting the requirements of this Section at no additional cost to the Department.

Apply all pavement markings prior to opening the road to traffic.

**713-4.2 Thickness:** Apply permanent tape pavement markings that have a thickness as designated on the APL for the particular product used.

Measure, record and certify on a Department approved form and submit to the Engineer, the thickness of white and yellow pavement markings in accordance with FM 5-541.

**713-4.3 Retroreflectivity:** Apply white and yellow pavement markings that will attain an initial retroreflectivity of not less than 450 mcd/lx·m<sup>2</sup> for white markings and not less than

350 mcd/lx·m<sup>2</sup> for yellow markings. Black pavement markings must have a retroreflectance of less than 5 mcd/lx m<sup>2</sup>.

Measure, record and certify on Department approved form and submit to the Engineer, the retroreflectivity of white and yellow pavement markings in accordance with FM 5-541.

**713-4.4 Color:** Use material meeting the requirements of 971-1.

**713-5 Contractor's Responsibility for Notification.**

Notify the Engineer prior to the placement of the material. Furnish the Engineer with the manufacturer's name and batch numbers of the material to be used. Ensure that the approved batch numbers appear on the material packages.

**713-6 Protection of Newly Applied Pavement Markings.**

Do not allow traffic onto or permit vehicles to cross newly applied pavement markings until they are sufficiently bonded. Remove and replace any portion of the pavement markings damaged by passing traffic or from any other cause, at no additional cost to the Department.

**713-7 Observation Period.**

Longitudinal pavement markings are subject to a 180 day observation period under normal traffic. The observation period shall begin with the satisfactory completion and acceptance of the work.

The longitudinal pavement markings shall show no signs of failure due to blistering, excessive cracking, chipping, discoloration, poor adhesion to the pavement, loss of retroreflectivity or vehicular damage. The retroreflectivity shall meet the initial requirements of 713-4.3. The Department reserves the right to check the retroreflectivity any time prior to the end of the observation period.

Replace, at no additional expense to the Department, any longitudinal pavement markings that do not perform satisfactorily under traffic during the 180 day observation period.

**713-8 Corrections for Deficiencies.**

Correct all deficiencies by removal and reapplication of a one mile section centered around the deficiency, as determined by the Engineer, at no additional cost to the Department.

**713-9 Submittals.**

**713-9.1 Submittal Instructions:** Prepare a certification of quantities, using the Department's current approved form, for each project in the Contract. Submit the certification of quantities and daily worksheets to the Engineer. The Department will not pay for any disputed items until the Engineer approves the certification of quantities.

**713-9.2 Contractor's Certification of Quantities:** Request payment by submitting a certification of quantities no later than Twelve O clock noon Monday after the estimate cut-off date or as directed by the Engineer, based on the amount of work done or completed. Ensure the certification of quantities consists of the following:

1. Contract Number, FPID Number, Certification Number, Certification Date and the period that the certification represents.

2. The basis for arriving at the amount of the progress certification, less payments previously made and less any amount previously retained or withheld. The basis will include a detailed breakdown provided on the certification of items of payment.

**713-10 Method of Measurement.**

The quantities, authorized and acceptably applied, under this Section will be paid as follows:

1. The length, in gross miles, of 6 inch solid, 10'-30' skip, and 3'-9' dotted lines.

2. The area, in square feet, for removal of existing markings acceptably removed.

Payment for removal of conflicting markings will be in accordance with 102-5.8. Payment for removal of non-conflicting markings will be paid separately.

The gross mile measurement will be taken as the distance from the beginning of the permanent tape line to the end of the permanent tape line and will include the unmarked gaps for skip and dotted lines. The gross mile measurement will not include designated unmarked lengths at intersections, turn lanes, etc. Final measurement will be determined by plan dimensions or stations, subject to 9-1.3.1.

**713-11 Basis of Payment.**

Price and payment will be full compensation for all work specified in this Section, including, all cleaning and preparing of surfaces, furnishing of all materials, application, curing and protection of all items, protection of traffic, furnishing of all tools, machines and equipment, and all incidentals necessary to complete the work. Final payment will be withheld until all deficiencies are corrected.

Payment will be made under:

Item No. 713- 1- Permanent Tape.

Solid – per gross mile.

Skip – per gross mile.

Dotted – per gross mile.

Remove – per square foot.