

CHAPTER 8 PREFORMED TAPE

OBJECTIVES

- 1) Preformed Tapes
- 2) Components
- 3) Types of Preformed Tapes
- 4) Methods of Application
- 5) Pavement Surface Considerations

PREFORMED TAPES

Preformed tapes come in rolls. The tape consists of pigments, resins, and reflective materials (glass beads or reflective elements) and comes ready to use with or without adhesives. Additional adhesive (primer) can be applied to the pavement to enhance the bond. This material can be used for lane lines, legends, symbols, and transverse markings.

COMPONENTS

Tapes are similar to other markings: pigments are used to produce color, and suitable resins are used to provide the necessary wear characteristics.

Resins

Pre-reacted resins hold the beads and pigments in place. For this reason, the tape is ready for installation upon delivery. Additionally, there may be an adhesive backing on the bottom side of the resin for adhesion to the roadway surface.

Reflective Materials

The manufacturer has already added reflective materials to the resin. Additional reflective materials are not added in the field.

Primers/Glues

Tapes, depending upon the type, may use primer and/or adhesives in addition to those already applied by the manufacturer. These various compounds are used to promote adhesion to the roadway surface.

Generally, tape that has been properly stored (sheltered at room temperature) will be usable for a period of one year. In addition to the normal requirements for accepting materials on the project, the manufacturer's expiration date must also be clearly shown. Certification letters for the tape, and for all related sealers and primers must be provided.

TYPES OF PREFORMED TAPES

Tapes fall into one of two categories: permanent and removable.

Permanent Tapes

Permanent pavement marking tapes are either flat or patterned. These tapes may require the use of a primer/sealer (unless otherwise recommended by the manufacturer). The cost of the sealer is usually included in the price of the tape. When applied properly, this material resists movement under traffic. A primer/sealer shall be applied to the roadway prior to the application of this material. Permanent tapes are generally used for longitudinal edge lines, skip lines, stop lines, crosswalks, legends, and symbols.

Patterned tape is textured, and is sometimes referred to as “profile tape.” Patterned tape used for longitudinal edge lines or skip lines on HMA is usually in-laid.

Removable Tapes

Removable tapes can be removed (pulled from the pavement surface) without using heat, solvents, or mechanical eradication. Generally, these tapes should be removed within 6 months of installation and should not leave any permanent residue on the road surface. The use of primers or additional glue may or may not be required. Although these tapes are similar in appearance to permanent tape, they may have an additional fiber mesh bonded in the resin. This mesh provides the necessary tensile strength allowing the tape to be pulled up from the roadway without breaking or tearing.

Blackout or black tape is another type of removable tape that is used to temporarily cover existing marking on an HMA road. Black tape, however, does not contain any reflective material. For example, if a permanent lane needs to be temporarily moved during construction and then reestablished at a later time, the black tape could be applied over the existing lines to hide them and new lines applied with another removable tape. When construction is complete, the original lanes can be reestablished by removing the black tape and the other temporary tapes. Black tape shall not be used on PCC roads.

METHODS OF APPLICATION

Flat and patterned tapes are normally installed by using a roller applicator. This is a walk-behind push cart that holds and applies one or two rolls of tape. The applied tape is then pressed onto the road surface using a walk-behind tamper cart. Weights are stacked on this cart to provide the necessary force to press the tape to the road. The tape manufacturers specify the required weight needed for each type of tape. This roller applicator and tamper procedure helps ensure that the tape is applied straight, especially in long line applications. If the manufacturer requires additional primers or glues, they can either be rolled or sprayed onto the tape and/or road surface.

When patterned tape is in-laid, no primer is used. It is in-laid with the last pass of the paving roller; the temperature of HMA is critical.

PAVEMENT SURFACE CONSIDERATIONS

The minimum application temperature is determined by manufacturer recommendations. Prior to the application of the tape, the surface must be free of contaminants. Contaminants may include dust, dirt, or moisture. If tape is applied to a surface containing dust, dirt, or moisture, poor adhesion will result. This situation should be avoided. Refer to Figure 8.1.

PREFORMED TAPE APPLICATION TROUBLESHOOTING			
PROBLEM	CAUSE	EFFECT	REMEDY
Material rolls up or shifts	<ul style="list-style-type: none"> • Not bonded prior to traffic • Tape crossing traffic • No primer adhesive 	<ul style="list-style-type: none"> • Loss of effectiveness 	<ul style="list-style-type: none"> • Replace material with proper tamping, adhesive and primer.
Poor Material adherence	<ul style="list-style-type: none"> • Moisture in pavement • Dirty surface • No primer • Expired shelf life 	<ul style="list-style-type: none"> • Errant delineation • Loss of Material • No delineation 	<ul style="list-style-type: none"> • Replace material applying properly

Figure 8.1

Preformed tape troubleshooting chart

*Note: Since the material is preformed, the only actions that are necessary are being sure that the material is the correct material specified, is placed properly, and is applied properly. FOLLOW MANUFACTURER RECOMMENDATIONS.

VIRGINIA DOT REFERENCES

See Appendix A for the following:

VIRGINIA DOT ROAD & BRIDGE SPECIFICATION BOOK

Section 246.01 thru 246.02 (a)

- (a) Color Requirements

Section 246.02 (f) and (g)

- (f) Plastic Backed Preformed Tape
- (g) Construction Marking Materials

Section 512.03 (i)

- (i) Construction Pavement Marking
(Types D and E)

Section 704.01 thru 704.03 (a) 2. d.

704.01 thru 704.03 Description, Material Types, and Procedures

- (a) Pavement Markings
 - 2. Type B Markings
 - b. Plastic Backed Preformed Tape (Installation Requirements)

See Appendix B for the following:

VIRGINIA DOT MANUAL OF INSTRUCTIONS

Section 204.30 (a) (1) and (2)

- (1) Sampling, Testing, and Approval
- (2) Acceptance (Requires Cert. II)
Approved List # 17

Follow Manufacturers installation instructions.

Chapter 8 Preformed Tape Review Questions

1. Preformed tapes do not contain pigments.
 - a) True
 - b) False

2. Preformed pavement marking tapes can be used for:
 - a) permanent applications.
 - b) temporary construction zone markings.
 - c) both a & b

3. When patterned tape is inlaid, no primer is used.
 - a) True
 - b) False

4. Glass beads are applied to pavement marking tapes:
 - a) 6 lb per 105 ft
 - b) 7 lb per 360 ft
 - c) by the manufacturer

5. The minimum surface temperature at which pavement marking tapes may be applied is:
 - a) 40 °F +
 - b) 50 °F +
 - c) 60 °F +
 - d) as recommended by the manufacturer

6. Virginia specifications allow pavement marking tapes to be tamped with vehicle tires.
 - a) True
 - b) False

7. Virginia Road & Bridge specifications state that the contractor is responsible for supplying a copy of the manufacturer's installation recommendations to the project inspector.
- a) True
 - b) False
8. Virginia designated Type E tape is:
- a) red
 - b) yellow
 - c) black
 - d) white