

CHAPTER 9 PAVEMENT MARKERS

OBJECTIVES

- 1) Pavement Markers
- 2) Types of Pavement Markers

PAVEMENT MARKERS

Pavement markers are pre-manufactured, reflectorized devices that provide positive in-roadway delineation at night, especially during inclement weather and in areas where roadway alignment variations dictate guidance that cannot be achieved by pavement markings and roadside delineation alone. The Manual on Uniform Traffic Control Devices (MUTCD) allows the use of pavement markers as a supplement to traditional longitudinal markings. Pavement markers cannot be used as a replacement for standard linestriping.

TYPES OF PAVEMENT MARKERS

Pavement markers are composed of a base material that is designed to resist impacts from traffic and to provide an adherent surface securing the marker to the roadway. Some agencies use a series of hard, non-reflectorized raised markers to form a line where overhead lighting is available. Other agencies require that all pavement markers be reflectorized. The retroreflective surface can either be reflective sheeting or a prismatic reflector. The outer cover of the prismatic area can be either plastic or glass.

The most common types of pavement markers are raised temporary, recessed snow plowable, and raised snow plowable.

Raised Temporary Markers

Raised temporary markers are normally used with construction zone markings. They are commonly referred to as “temporary markers” or “RPMs”. Specifications often require the use of temporary pavement markers in transition areas of work zones that will encroach upon the traveled roadway for a period of more than two days, and in other areas as required by the engineer.

These markers are glued to the roadway with a bitumen or epoxy adhesive. Most markers of this type consist of a plastic body with a reflective surface.

These pavement markers shall be replaced when they become damaged or have been removed by traffic. These markers will be inspected on a routine basis and replaced as necessary.

Another general type of temporary raised marker is the “peel and stick type”. These markers generally have a paper backing that is removed to expose a butyl/adhesive pad. The marker is then applied to the roadway and firmly pressed in place. Figure 9.1 shows a variety of raised temporary markers.



Figure 9.1
Raised temporary markers

Recessed, Snow Plowable Marker System

This marker system consists of a tapered slot that is cut into the roadway. A marker similar to the raised marker is affixed in the slot using epoxy or other approved adhesive. This design allows the snowplow blade to slide over the slot and not contact the marker because it is just below the roadway surface.

These markers can only be used effectively where there is sufficient traffic speed (35+ mph) to “whip” out any water and/or dirt that may collect on or in front of the marker lenses. This type of marker has a plastic body with a reflective surface. Figure 9.2 shows several recessed, snow plowable pavement markers.



Figure 9.2
Recessed snow plowable markers

Raised, Snow Plowable Marker System

This marker system generally consists of a reflective marker glued in a protective steel or cast-iron casting. This casting is applied with epoxy into a groove that is cut in the pavement surface. The system is designed so that a snowplow blade will ride up and over the reflective marker, leaving it undamaged. The reflective lens can be replaced in the casting using approved adhesive. Figure 9.3 shows a raised snow plowable marker system.



Figure 9.3
Raised, snow plowable marker system

Installation Procedure:

1. Determine the correct location for the marker.
 - In pavement with no deficiencies.
 - Not on joints or cracks.
 - Away from lane striping.
2. Cut the pavement with the correct saw blades.
 - Clean and dry the cut.
 - Ensure all 4 casting leveling lugs rest on the pavement.
 - Ensure front and back keel tips are flush with or below the pavement surface.
 - Test the cut depth with a casting and extend cut if necessary.
 - Castings must be installed in NEW cuts. Don't reuse existing cuts.
3. Apply the proper amount of approved epoxy in the cut.
 - Epoxy should fill the cut to within 1/2 inch from the pavement surface. This will ensure some epoxy will overflow around the casting to seal the saw cut area.
4. Place the casting in the epoxy-filled cut.
 - Ensure all leveling lugs are resting on the pavement surface.
 - Ensure front and back keel tips are flush with or below the pavement surface.
 - Ensure epoxy overflows around the casting to seal the saw cut area. Add additional epoxy if needed.
 - Ensure epoxy does not cover the reflective lens.
 - Protect the marker from traffic until the epoxy completely hardens.

VIRGINIA DOT REFERENCES

See Appendix A for the following:

VIRGINIA DOT ROAD & BRIDGE SPECIFICATION BOOK

SECTION 235.01 THRU 235.02 (F) RETROREFLECTORS (MATERIALS)

Section 512.03 (k)

(k) Temporary Pavement Markers

Section 704.03 2. (c) 1. and 2.

(c) Pavement Markers

1. Snow-plowable Raised Pavement Markers
2. Raised Pavement Markers

See Appendix B for the following:

MANUAL OF INSTRUCTIONS

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

- (1) Sampling, Testing, and Approval
- (2) Acceptance (Requires Cert. II)
Approved List # 22

Also, follow Manufacturers installation instructions.

Chapter 9
Pavement Markers
Review Questions

1. Pavement markers may be used in lieu of pavement markings.
 - a) True
 - b) False

2. The most common types of pavement markers are:
 - a) raised, temporary.
 - b) raised, snow plowable.
 - c) recessed, snow plowable
 - d) all of the above

3. Raised temporary pavement markers are glued to the roadway with a bitumen or epoxy adhesive.
 - a) True
 - b) False

4. Raised temporary pavement markers are normally used with:
 - a) permanent markings.
 - b) construction zone markings.
 - c) a & b
 - d) none of the above

5. Raised snow plowable marker castings are installed using bitumen adhesive.
 - a) True
 - b) False