




STATE OF DELAWARE  
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**MEMORANDUM**

To: All Users of the Delaware Manual on Uniform Traffic Control Devices

From: Adam S. Weiser, P.E., PTOE  
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Date: January 7, 2011

Subject: Temporary Pavement Markings Policy

Section 6F.72 of the Delaware Manual on Uniform Traffic Control Devices (DE MUTCD) suggests that the State develop a policy regarding the use of temporary pavement markings for highway work zones. As such, this memorandum defines the policy for the use of temporary pavement markings within highway work zones on roadways within the jurisdiction of the Delaware Department of Transportation (DelDOT). This policy covers the widths of longitudinal pavement markings, the required markings for long-term stationary operations and the required markings between lifts of pavement during paving operations.

**A. Temporary Pavement Marking Dimensions**

The widths of all temporary pavement markings, including centerlines, edge lines and other longitudinal pavement markings shall comply with Section 3A.05 of the DE MUTCD. This Section requires that the minimum width of a normal line be 4-inches. As such, longitudinal temporary pavement markings on all roadways shall be no less than 4-inches wide. The layout of temporary pavement markings shall match the layout of existing pavement markings, i.e., provide a 6-inch wide gap between centerlines, no single solid yellow centerlines, etc. The width of transverse pavement markings shall be as described in the applicable sections of Part 3 of the DE MUTCD. Typical dimensions for common transverse markings are as follows:

- Stop lines = 16 inches wide
- Crosswalk markings:
  - Piano key markings = 24 inches wide
  - Parallel transverse markings = 12 inches wide with a minimum 6 feet separation between lines (allowable for temporary crosswalk markings only)

## **B. Temporary Pavement Markings in Long-Term Stationary Work Zones**

Some projects require work zone temporary traffic control to be setup in a specified configuration for long periods of time. These types of highway work zones usually have several construction phases that require different traffic patterns and the use of temporary pavement markings. These types of operations typically consist of long duration lane closures, lane shifts and work that occur behind portable safety barrier. Due to the nature of these types of operations, temporary pavement markings are typically installed to delineate changes in traffic patterns.

As defined in the DE MUTCD, long-term stationary work is work that occupies a location more than three (3) days. As such, this Policy requires that temporary pavement markings be installed in locations where work occupies a location more than three (3) days and the work requires continuous lane closures, lane shifts and/or other traffic pattern changes. In these situations, the temporary pavement markings shall be installed along with the other temporary traffic control, prior to work beginning. For these types of operations, all temporary pavement markings shall comply with Part 3 of the DE MUTCD regarding the design and use of longitudinal and transverse pavement markings. At a minimum, the following markings, if applicable for the specified location, shall be used:

- Centerline
- Edge line
- Broken Lane lines, if applicable
- Turn arrows and lane drop arrows
- Turn lane and lane drop dotted lines
- Turning tracks within intersections, if delineation of turning paths is needed
- Stop lines
- Crosswalks that are to remain in use during construction (two 12-inch wide parallel markings separated by a distance of 6 feet placed perpendicular to approaching traffic is allowable for temporary crosswalks)
- Railroad crossing pavement markings
- Bike symbols, if applicable
- Raised/recessed pavement markers when required by the DE MUTCD or as directed by the Traffic Section.

Temporary pavement markings materials for long-term stationary operations should follow the guidelines contained in *Striping Items Usage Guidelines* available on the DelDOT Design Resource Center. For long-term stationary operations, pavement markings in the temporary traveled way that are no longer applicable shall be removed or obliterated as soon as practical. Pavement marking obliteration shall leave a minimum of pavement scars and shall remove old marking material. The method of pavement marking obliteration shall be based on the provisions of the Contract Documents or as directed by the Engineer. Temporary pavement markings shall be refreshed as directed by the Engineer. All applicable pavement markings shall be in place prior to the roadway or lanes being opened to traffic.



### **C. Temporary Pavement Markings for Paving Operations**

Projects that require the placement of multiple lifts of paving material, such as pavement rehabilitation projects, subdivision entrance construction, utility construction and capital projects that include mill and overlay operations, typically require the use of temporary pavement markings between successive lifts of paving material. In these situations, temporary pavement markings are typically placed in the same location of the proposed permanent pavement markings and remain in place until a new lift of paving is installed or until the installation of permanent pavement markings is scheduled. Examples of this type of work include when the original pavement surface is milled off and when new paving material is placed in different lifts. These markings shall be in place prior to the affected travel lanes being opened to traffic. At a minimum, the following types of temporary pavement markings, if applicable for the specified location, shall be placed:

- Centerline
- Edge line, unless curb is present adjacent to travel lane and no shoulder exists
- Lane lines, if applicable
- Stop lines
- Crosswalks located in school zones, high pedestrian areas, midblock locations, or as directed by DelDOT Traffic (two 12-inch wide parallel markings separated by a distance of 6 feet placed perpendicular to approaching traffic is allowable for temporary crosswalks)
- Railroad crossing pavement markings
- Turning tracks within intersections, if delineation of turning paths is needed.

Temporary pavement marking materials for paving operations should be as follows:

- Temporary tape with retroreflective properties
- Temporary paint with retroreflective properties
- Epoxy paint with retroreflective properties (on Interstates, freeways and expressways only)

For temporary crosswalk markings on the final lift of pavement, it is recommended that temporary tape be used so that it can be easily removed when the permanent crosswalk markings are placed. Temporary pavement markings that are used on the final lift of pavement for paving operations should be replaced with permanent markings within thirty days of completing the paving.



#### **D. Temporary Pavement Markings for Microsurfacing Operations**

Microsurfacing is a type of paving operation during which a very thin asphalt coating is applied to a roadway, typically on two-lane, two-way roads. Application of the material within a highway work zone does not require a lot of time and therefore the operation can move along the roadway fairly rapidly. Due to the cure time required for this material, temporary pavement markings cannot be applied to the roadway immediately after the material is laid, even though traffic can be restored to the affected section of roadway within thirty (30) minutes of application. The material is required to be cured for up to one hour, after the operation is complete, prior to the application of temporary pavement markings.

For these types of situations, the DE MUTCD provides an Option statement in Section 6F.72, related to Temporary Pavement Markings that states, "For temporary situations of 3 calendar days or less, for a two- or three-lane road, no-passing zones may be identified by using DO NOT PASS (R4-1) signs rather than pavement markings." In order to restore traffic to the affected section of roadway and to allow the microsurfacing operation to move to other sections along the roadway, the use of this Option is allowed only for microsurfacing operations, however, temporary pavement markings shall be provided by the end of each day's operation. In addition the following additional requirements have been developed and are as follows:

- The DO NOT PASS (R4-1) signs shall be placed at the beginning and end of the section of roadway to which they apply, at downstream locations of intersections and at ½ mile increments everywhere else within the entire project limits. The contractor shall have enough of these signs available and on-site for each and every location under the applicable microsurfacing contract, prior to any microsurfacing work being undertaken.
- In addition to the R4-1 signs, the contractor shall place Two-Way Traffic Warning Signs (W6-3, black on orange) every ½ mile as well. These signs shall be placed 1/4 mile between each DO NOT PASS (R4-1) sign. The contractor shall have enough W6-3 signs available for each and every location under the applicable microsurfacing contract.
- The contractor shall ensure that temporary pavement marking materials and equipment are on-hand prior to the beginning of construction for that day's work. Temporary pavement markings shall be applied at the end of each day's operation, once the surface treatment has cured, in accordance with Section C above. If the lane closure has been removed from the roadway, the striping contractor shall use the applicable temporary traffic control case or typical application for maintenance of traffic from the DE MUTCD for temporary traffic control that is required to place the temporary pavement markings.
- A designated person on the contractor's staff shall periodically review the signs to ensure that they are visible to traffic.
- As the flagging operation is moved along the roadway, the contractor shall move the advance warning area that is required and provide additional ROAD WORK AHEAD signs at the beginning of the project limits.

At the end of each work day, temporary pavement markings, in accordance with Section C above, shall be placed along the affected limits of the roadway prior to the Contractor leaving the site for the day.

In addition, microsurfacing operations require the removal of epoxy and thermoplastic pavement marking materials in order to get a better bond between the existing pavement and microsurfacing material. When the contractor removes the epoxy and/or thermoplastic pavement markings during the preparation phase of these projects, temporary pavement markings (paint or tape) meeting the requirements of the applicable special provisions shall be applied immediately thereafter. It is recommended that the temporary pavement marking application occur as part of the initial removal operation (i.e., make the equipment/installation part of the removal “train”).

The information contained within this Section of this Policy is only applicable to Microsurfacing projects within the State of Delaware and shall not be used for any other project without written approval from the Traffic Safety Section.

**E. Further Information**

Questions regarding the application of temporary pavement markings within highway work zones should be directed to the Traffic Safety Section. Questions regarding materials, installation methods or removal methods should be directed to the Pavement Markings Section.

As new constructions means and/or methods are developed, consideration must be given to the placement and maintenance of both temporary and permanent pavement markings.