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WORK ZONE TRAFFIC CONTROL Project Special Provisions

WORK ZONE “PERFORMANCE” PAVEMENT MARKINGS:

(06/24/2015)

Description

Furnish and install Work Zone “Performance” pavement markings that delineate the travel way for work zone traffic patterns on high speed (greater than 55 MPH) facilities and or facilities that have traffic volumes greater than 50,000 ADT. The purpose of Work Zone “Performance” pavement marking is to provide a more durable work zone pavement marking that will last the full duration of a traffic pattern during any particular phase of construction without having to be replaced or reapplied for a period of 12 months. In addition, they are to provide a higher performance level for both initial and residual retroreflectivity than standard traffic paints to improve nighttime work zone visibility.

Materials

A) General

Use materials in accordance with the Manufacturer’s recommendations that will retain both durability and a minimum retroreflectivity as described elsewhere in this specification for a period of 12 months.

In addition, it shall be manufactured to bond successfully to both concrete and asphalt pavements and to previously marked surfaces. The following are approved materials to be used for Work Zone “Performance” pavement marking applications.

- Polyurea
- Thermoplastic (Extruded and Sprayed)
- Epoxy
- Polymer (Single System)
- Cold Applied Plastic (Type IV)

B) Material Qualifications/Certifications

Only use Work Zone “Performance” pavement marking materials as listed above that are on the NCDOT Approved Products List. In addition, provide a Type 3 Material Certification for all materials and a Type 3 and Type 4 certification for all reflective media in accordance with Article 106-3, and Section 1087-4 of the North Carolina Standard Specifications For Roads and Structures.

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(C) Performance

Poor performance of Work Zone “Performance” pavement marking materials at any site, whether or not related to a specific contract may be grounds for nonacceptance and removal of the material from any project under contract.

Construction Methods

Do not use hand applied methods or any other non-truck mounted application equipment /device to install Work Zone “Performance” pavement markings for applications longer than 1000 feet. All Work Zone “Performance” pavement markings are to be installed in a single application.

A) Testing Procedures.

All Work Zone “Performance” pavement markings will be tested by the Department through an independent Mobile Retroreflective Contractor. The Work Zone “Performance” pavement markings will be scanned to ensure the retroreflectivity requirements in Section C of this specification are met.

B) Application Equipment

See Section 1205 of the North Carolina Standard Specifications for Roads and Structures

C) Material Application

The Work Zone “Performance” pavement marking material shall be applied at the following minimum thicknesses:

Polyurea = 20 mils wet

Epoxy = 20 mils wet

Thermoplastic = 50 mils
(Extruded or Sprayed)

Polymer = 20 mils wet

Cold Applied Plastic (IV) = Manufacturer’s recommendation

Unless otherwise stated in the plans, the line widths are as follows:

Edge lines, Solid Lane Lines, Skip and Mini-Skip Lines	=	6”
Gorelines	=	12”

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“No track” dry times for the liquid systems shall be 10 minutes or less. Traffic shall not be placed on any material until it’s sufficiently dry/cured to eliminate wheel tracking.

The minimum level of retroreflectivity for any Work Zone “Performance” pavement marking system selected is as follows:

Reflectometer Requirements For Work Zone “Performance” Pavement Markings

Color	Initial	6 Months
White	375 mcd/lux/m2	275 mcd/lux/m2
Yellow	250 mcd/lux/m2	150 mcd/lux/m2

The above chart describes the retroreflectivity levels the work zone performance pavement markings are required to meet during initial placement and maintain for a minimum of 6 months.

Initial retroreflective measurements will be taken with a mobile retroreflectometer within 30 days after initial placement. The Contractor shall notify the Engineer 7-10 days prior to the installation of new pavement marking lines. Accordingly, the Engineer will notify the Signing and Delineation Unit’s Standards Engineer so the Mobile Retroreflective Contractors can be scheduled to measure the pavement markings for compliance.

If the markings appear to be non-performing within the first 6 months, the Engineer may request additional retroreflectivity readings be taken. If and when this becomes necessary, the same notification procedure as described above will be used to have markings read by the Mobile Retroreflective Contractors. If measured and found to be more than 25% below required retroreflectivity levels within the first 6 months, the markings are to be replaced at no cost to the Department.

If Work Zone “Performance” pavement markings are snowplowed within their 12 month expected life, the material shall be durable to withstand a single snow event without showing excessive fatigue in both bond and retroreflectivity. However, if excessive damage has occurred during a single event or multiple snow plow events, resulting in more than 25% of the pavement marking edgelines or skips being physically removed, then the Work Zone “Performance” pavement markings are to be replaced at the contract unit price unless the traffic pattern is to change within 30 days.

Unless the Work Zone “Performance” pavement marking is replaced due to excessive damage, it shall meet the following minimum retroreflectivity values within the single snow event.

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Reflectometer Requirements For Work Zone “Performance” Pavement Markings After Single Snow Event

Color	MINIMUM
White	150 mcd/lux/m ²
Yellow	100 mcd/lux/m ²

If the work zone experiences more than more than 1 snow event requiring snowplowing, the retroreflectivity numbers in the chart no longer apply. The Engineer will determine if the pavement markings are still performing adequately or if replacement is necessary due to excessive damage caused by snowplow activities. If the markings are found to be deficient, they shall be replaced at the contract unit price unless the traffic pattern is to change within 30 days.

D) Surface Preparation

All pavement surfaces to receive Work Zone “Performance” pavement markings are to be swept clean and prepared in accordance with the Manufacturer’s recommendation.

E) Temperature and Weather Limitations

Do not apply Work Zone “Performance” pavement markings unless the ambient air temperature and the pavement temperature is 50°F or higher for thermoplastic and is 40°F or higher for all other materials. Do not install unless the pavement surface is completely dry and not within 4 hours of a heavy rain event such as a thunderstorm with rainfall intensities greater than 1 inch/per hour.

In the event a traffic shift has to take place when the air and pavement temperatures are below the required minimums or if a rain event occurs prior to or during a planned traffic shift, upon approval by the Engineer, an acceptable alternative is to install temporary pavement markings. Use 1 application of standard traffic paint to produce a 4” line at 15 mils (wet). Beads shall also be applied to provide proper retroreflectivity until the “performance” material can be installed. Payment will be made at the contract unit price for 4” paint. The Work Zone “Performance” pavement markings shall be applied within 90 days of installation of the temporary pavement markings.

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Maintenance

Replace any Work Zone “Performance” pavement material that prematurely fails due to debonding or excessive wearing where it doesn’t maintain its retroreflectivity for the required 12 month duration. Any traffic control and Work Zone “Performance” pavement marking costs due to replacement is at no cost to the Department unless it’s due to excessive damage caused by snowplow damage.

DocuSigned by:
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