

808-R-551 PERFORMANCE BASED PAINT PAVEMENT MARKINGS

(Revised 11-21-08)

The Standard Specifications are revised as follows:

SECTION 109, AFTER LINE 643, INSERT AS FOLLOWS:

(f) Pavement Traffic Markings, PTM

Quality adjustments will be calculated in accordance with 808.07.

SECTION 808, DELETE LINES 142 THROUGH 172.

SECTION 808, AFTER LINE 172, INSERT AS FOLLOWS:

(a) Traffic Paint

1. Traffic Paint Pavement Markings

These traffic paint markings shall be used for temporary pavement markings or when performance based markings are not specified.

a. Application

Fast dry traffic paint shall be applied only when the pavement temperature is 40°F (5°C) or above. Waterborne traffic paint shall be applied only when the pavement temperature is 50°F (10°C) or above. Fast dry traffic paint will only be permitted between October 1 and the following April 30. Cold temperature waterborne traffic paint shall be applied only when the pavement and ambient air temperature is a minimum of 35°F (2°C) and rising.

The wet film thickness of the traffic paint shall be a minimum of 15 mils (380 µm). Painted lines and markings shall be immediately reflectorized by applying glass beads at a uniform minimum rate of 6 lb/gal. (0.7 kg/L) of traffic paint.

Painted markings on newly constructed surfaces shall receive two applications of paint and glass beads. The second application shall be applied as soon as practical after the first application dries.

b. Equipment

Traffic paint shall be applied with a spray type machine capable of applying the traffic paint under pressure through a nozzle directly onto the pavement. The machine shall be equipped with the following:

- (1) an air blast device for cleaning the pavement ahead of the application;*
- (2) a guide pointer to keep the machine on an accurate line;*
- (3) spray guns which can be operated individually or simultaneously;*
- (4) agitator(s);*
- (5) a control device to maintain uniform flow and application;*
- (6) capability of heating the material to application temperatures;*
- (7) an automatic device which will provide a line of the required pattern; and*

- (8) *an automatic glass bead dispenser which is synchronized with the marking application.*

A small hand propelled machine, designed for that purpose, may be used to apply pavement markings. A brush may be used if approved to apply some markings.

2. Performance Based Traffic Paint Pavement Markings

The performance based traffic paint pavement markings consist of furnishing and applying longitudinal markings of waterborne traffic paint and glass beads, to HMA and PCC pavements. The markings shall only be applied when conditions meet or exceed the manufacturer's recommendations. The markings shall meet or exceed all performance requirements.

a. Materials

The waterborne traffic paint and glass beads shall be commercially available traffic marking materials which shall be chosen by the Contractor and will not be required to meet the material specifications found in 909.05 or 921.02(e). A certification which shows the paint meets all IDEM and EPA regulatory requirements for VOC levels and lead, chromium or other heavy metals from the paint manufacturer shall be provided. The daytime and nighttime color of the applied markings shall be in accordance with ASTM D 6628 when determined in accordance with ASTM E 811 and E 1349. Acceptance of the materials will also be based on the performance of the applied markings.

b. Application Requirements

The paint manufacturer's recommendations shall be followed in regard to all requirements during application and curing of the pavement markings. The pavement markings shall be protected from traffic until dry to eliminate tracking. The application equipment shall be in accordance with 808.07(a)1b.

The application rates utilized for the paint and glass beads are at the discretion of the Contractor provided the minimum wet film thickness of the applied paint is 15 mils and the minimum application of glass beads is 6 pound per gallon of paint. The number of applications of paint and beads shall be as necessary to meet the performance requirements.

c. Performance Requirements

(1) Retro-reflectivity

The painted centerlines and/or edgelines shall meet or exceed minimum average retro-reflectivity measurements. The white pavement markings shall provide a minimum average retro-reflectivity of 250 mcd/m²/lx. The yellow pavement markings shall provide a minimum average of 175 mcd/m²/lx.

If a pay item, retro-reflectivity testing is included in the contract and performance based traffic paint is specified, retro-reflectivity testing equipment shall be furnished, calibrated, and operated in accordance with ITM 931. The markings shall be tested in a period of not less than 14 days to not more than 30 days after the materials are applied.

The retro-reflectivity equipment shall remain the property of the Contractor. The Contractor shall submit a report as described in ITM 931, including the specified test results and calculations, to the Engineer within 3 business days of each day of testing.

When retro-reflectivity testing is not included as a pay item, the Department will furnish, calibrate, and operate the testing equipment in accordance with ITM 931. The markings will be tested in a period of not less than 14 days to not more than 30 days after the materials are applied.

(2) Durability

The pavement markings shall have a minimum resistance to wear of 97% in accordance with ASTM D 913 for a minimum of 90 days after application.

d. Retro-reflectivity Quality Assurance Adjustments

Pavement markings that fail to meet the minimum average retro-reflectivity will have quality adjustments applied to the payment of the markings as follows:

White	Yellow	Quality Adjustment
>250 mcd/m ² /lx	>175 mcd/m ² /lx	1.00
225 to 249	-	0.95
200 to 224	150 to 174	0.90
175 to 199	-	0.85
150 to 174	125 to 149	0.80
125 to 149	-	0.75
100 to 124	100 to 124	0.70

Pavement marking segments which are found to have an average retro-reflectivity reading of below 100mcd/m²/lx shall be re-stripped with no additional payment. The re-stripping shall begin within 14 calendar days of the completion of the retro-reflectivity measurement. Line segments of white pavement markings which have retro-reflectivity measurements between 100 and 249mcd/m²/lx may be re-stripped with no additional payment. Line segments of yellow pavement markings which have retro-reflectivity measurements between 100 and 175mcd/m²/lx may be re-stripped with no additional payment. Following each re-stripping, additional retro-reflectivity measurements will be made at no additional payment. Quality assurance adjustments will be based on the final retro-reflectivity measurements. The alignment of all re-stripped pavement markings shall be placed within ± 0.25 inches in width and ± 2.0 inches in length of the original placed markings. No more than two re-stripings will be permitted. If the final average retro-reflectivity measurements is below 100 mcd/m²/lx or the alignment or color tolerances are not in compliance the segment of line will be adjudicated as failed material in accordance with 105.03.

SECTION 808, AFTER LINE 480, INSERT AS FOLLOWS:

Retro-reflectivity testing will not be measured for payment.

SECTION 808, AFTER LINE 521, INSERT AS FOLLOWS:

Payment for furnishing, calibrating, and operating retro-reflectivity testing equipment will be paid for at the contract lump sum price if the Schedule of Pay Items includes a lump sum pay item for retro-reflectivity testing. The cost of report preparation

shall be included in the cost of retro-reflectivity testing. Adjustments to the contract payment with respect to retro-reflectivity of performance based pavement markings will be included in a quality assurance adjustment pay item in accordance with 109.05.1. If the retro-reflectivity testing cannot be performed per ITM 931 due to weather limitations only, the testing requirement may be waived and payment made at 100% provided that all other requirements are met and no payment will be made for retro-reflectivity testing.

SECTION 808, AFTER LINE 532, INSERT AS FOLLOWS:

*Line, Performance Based, _____, _____, _____, _____ in. (mm) LFT (m)
material type color width*

SECTION 808, AFTER LINE 537, INSERT AS FOLLOWS:

Retro-reflectivity Testing LS

SECTION 909, AFTER LINE 498, INSERT AS FOLLOWS:

(d) Cold Temperature White and Yellow Waterborne Traffic Paint

The cold temperature white and yellow waterborne traffic paint shall consist of an emulsion of pigmented binder formulated to be applied and cure at air and pavement temperatures above 35°F (2°C). The cold temperature waterborne traffic paints shall be in accordance with 909.05(c) except for the application temperature and no-tracking condition requirements.