

**ITEM 685.15----25 - BLACK EPOXY PAVEMENT MARKINGS, LF**

**1. DESCRIPTION:**

- 1.01 This work consists of furnishing and applying black epoxy contrast pavement markings at the locations and in accordance with the patterns indicated on the Plans, or as ordered by the Engineer, and in conformance with the National Manual on Uniform Traffic Control Devices and NYS Supplement, and these specifications. Unless otherwise indicated, payments will be for increments of six (6) inches of strip width.
- 1.02 The black epoxy marking shall be a two-component, hot-spray applied epoxy resin pavement marking material to be used for pavement marking on Portland cement concrete pavement surfaces. Following an aggregate drop, and upon curing, it shall produce an adherent stripe of specified thickness and width capable of resisting wear from traffic.

**2. MATERIALS:**

- 2.01 **Epoxy Resin Requirements:** The two-component, 100% solids, paint shall be formulated and designed to provide a simple volumetric mixing ratio (e.g., 2 part component A to 1 part component B) specifically for service as a hot-spray applied binder for black aggregate in such a manner as to produce maximum adhesion. The material shall be composed of epoxy resins and pigments only.
- 2.02 The paint shall be well mixed in the manufacturing process and shall be free from defects and imperfections that may adversely affect the serviceability of the finished product. The paint shall not liver, thicken, curdle, gel, settle excessively, or otherwise display any objectionable properties after storage. Individual components shall not require mixing prior to use when stored for a maximum of 12 months.
- 2.03 The overall paint composition shall be left to the discretion of the manufacturer, but shall meet the following requirements:

<b><u>Composition:</u></b>	<b><u>Component</u></b>	<b><u>Percent by Weight</u></b>
	Carbon Black (ASTM D476 Type III)	7 ± 2 percent, by weight
	Talc	14 ± 2 percent, by weight
	Epoxy Resin	79 ± 4 percent, by weight

- 2.04 **Black Aggregate Requirements:** The moisture resistant aggregate shall meet the gradation requirements (AASHTO T27) as follows:

<b><u>Sieve Size</u></b>	<b><u>Percent Retained</u></b>
#30	18 – 28%
#40	60 – 80%
#50	2 – 14%

The amount of moisture resistant aggregate to be used shall be 10 lbs. of aggregate per gallon of paint.

- 2.05 The moisture resistant aggregate shall have a ceramic coating. The aggregate shall be angular with no dry dispensement pigment allowed.
- A. **Hardness:** The black aggregate hardness shall be 6.5 – 7 on Moh's Mineral Scale.
- B. **Porosity:** The black aggregate porosity shall be less than two (2) percent.
- C. **Moisture Content:** The black aggregate moisture content shall be less than a half (.5) percent.

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**2. MATERIALS:** (cont'd)

2.06 **Packaging and Shipment Requirements:** Epoxy pavement marking materials shall be shipped to the job site in strong substantial containers. Individual containers shall be plainly marked with the following information:

- A. Name of Product
- B. Lot Number
- C. Batch Number
- D. Test Number
- E. Date of Manufacture
- F. Date of expiration of acceptance (6 months from date of manufacture)
- G. The statement (as appropriate)
  - Part A – Contains Pigment and Epoxy Resin
  - Part B – Contains Catalyst
- H. Quantity
- I. Mixing proportions, Application Temperature and Instructions
- J. Safety Information
- K. Manufacturer's Name and Address

**3. CONSTRUCTION DETAILS:**

3.01 **General:** All pavement markings shall be placed as shown on the Plans.

Before any pavement markings work is begun, a schedule of operations shall be submitted for the approval of the Engineer.

At least five (5) days prior to starting striping the Contractor shall provide the Engineer with the epoxy manufacturer's written instructions for use. These instructions shall include but not be limited to: mixing ratios, application temperatures, and recommendations for use of water spray.

The application of pavement markings shall be done in the general direction of traffic. Striping against the direction of traffic flow shall not be allowed.

The Contractor shall be responsible for removing, to the satisfaction of the Engineer, tracking marks, spilled epoxy or epoxy markings applied in unauthorized areas.

The hot water spray shall not be used in conjunction with markings applications on any pavement surface, or on any existing durable type marking, unless specifically recommended by the manufacturer of the epoxy material.

3.02 **Atmospheric Conditions:** Epoxy pavement markings shall only be applied during conditions of dry weather and on substantially dry pavement surfaces. At the time of installation the pavement surface temperature shall be a minimum of 32°F and the ambient temperature shall be a minimum of 32°F and rising. The Engineer shall be the sole determiner as to when atmospheric conditions and pavement surface conditions are such to produce satisfactory results.

3.03 **Surface Preparation:** The Contractor shall clean the pavement or existing durable marking to the satisfaction of the Engineer.

Surface cleaning and preparation work shall be performed only in the area of the epoxy markings application.

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**3. CONSTRUCTION DETAILS:** (cont'd)

**3.03 Surface Preparation:** (cont'd)

At the time of application **all** pavement surfaces and existing durable markings shall be free of oil, dirt, dust, grease and similar foreign materials. The cost of cleaning these contaminants shall be included in the bid price of this item. Also, the item shall include the cost of removal of the curing component in the area of the epoxy markings application, if concrete curing compounds on new Portland cement concrete surfaces have been used. Waterblasting will not be permitted for removal.

**3.04 Epoxy Applying Equipment:** Applying equipment for the placement of epoxy reflectorized pavement markings shall be approved by the Authority, prior to the start of work.

At any time throughout the duration of the project, the Contractor shall provide free access to his epoxy applying equipment for inspection by the Engineer or his authorized representative.

In general, the applying equipment shall be a mobile, truck mounted and self contained pavement marking machine, specifically designed to apply epoxy resin materials in continuous and skip-line patterns. The applying equipment shall be maneuverable to the extent that straight lines can be followed and normal curves can be made in a true arc.

The applicator shall be capable of installing up to 20,000 lineal feet of epoxy reflectorized pavement markings in an 8-hour day and shall include the following features:

- A. The applicator shall provide individual material reservoirs, or space, for the storage of Part A and Part B of the epoxy resin composition and for the storage of water.
- B. The applicator shall be equipped with heating equipment of sufficient capacity to maintain the individual epoxy resin components at the manufacturer's recommended temperature for spray application and for heating water to a temperature of approximately 140°F.
- C. The applicator shall be equipped with metering devices or pressure gauges, on the proportioning pumps. Metering devices or pressure gauges shall be visible to the Engineer.
- D. The applicator shall be equipped with all the necessary spray equipment, mixers, compressors, and other appurtenances to allow for the placement of epoxy pavement markings in a simultaneous sequence of operations.

**3.05 Application of Black Epoxy Contrast Pavement Markings:** Black epoxy contrast pavement markings shall be placed at the widths designated on the Contract Plans.

Markings operations shall not begin until applicable surface preparation work is completed, and approved by the Engineer.

Black epoxy contrast pavement markings shall be applied at a minimum uniform thickness of 20 mils on all Portland cement concrete surfaces followed by a single drop of graded black aggregate.

On Portland Cement concrete pavements a black contrast skip line shall be ten (10) feet in length of the same width as the white epoxy reflectorized skip line. It is to begin at the end of the white skip line. The black contrast skip line is to have a single application of graded black aggregate.

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**3. CONSTRUCTION DETAILS:** (cont'd)

**3.05 Application of Black Epoxy Contrast Pavement Markings:** (cont'd)

Any markings which, after application and curing, are determined by the Engineer to be defective and not in conformance with the specification, shall be repaired or replaced at no additional cost to the Authority. Defective markings include, but are not limited to, insufficient film thickness and line width; uncured or discolored epoxy; insufficient bond to existing surface.

**4. METHOD OF MEASUREMENT:**

4.01 The quantity of permanent black epoxy resin paint pavement striping will be measured by the number of linear feet of pavement striping line installed in accordance with the Plans and accepted by the Engineer.

**5. BASIS OF PAYMENT:**

5.01 The quantity of permanent black epoxy resin paint pavement striping payment will be paid for at the Contract unit price per linear feet for a six (6) inch wide line. Price and payment shall include cleaning and preparing the pavement surface, and placing all materials, for all labor, tools, equipment and incidentals necessary to complete the work.