

ITEM 584.50 06 - THIN EPOXY POLYMER OVERLAY WEARING SURFACE FOR STRUCTURAL SLABS

DESCRIPTION

Furnish and apply a thin epoxy polymer overlay wearing surface over an existing prepared bridge deck surface as indicated in the Contract Documents.

MATERIALS

- A. Thin Epoxy Polymer Overlay.** The Contractor shall utilize one of the following thin epoxy polymer overlay systems (epoxy and aggregate) or approved equal. Only one system may be used on any one structure.
- TRAFFICGUARD EP35 as manufactured by Degussa Building Systems.
 - SAFELANE as manufactured by Cargill, Inc.
 - T-48 EPOXY OVERLAY as manufactured by Transpo Industries, Inc.
- B. Patching Material.** Patching materials shall meet the requirements of 701-09 or 721-20 and shall be 100% compatible with the selected epoxy overlay system as verified by the manufacturers representative in writing.
- C. Packaging and Shipment.** Ship all components in strong, substantial containers, bearing the manufacturer's label specifying date of manufacture, batch number, brand name, quantity, and date of expiration or shelf life.

CONSTRUCTION DETAILS

- A. General.** A minimum of two weeks prior to the scheduled commencement of work, the Contractor shall submit to the Engineer Installation Instructions and Material Safety Data Sheets (MSDS) for the selected thin epoxy polymer overlay system (aggregate and epoxy). This shall include, but not be limited to, materials, surface preparation methods, overlay application methods, material application rates, and overlay cure procedures.

A technical representative from the overlay manufacturer shall be on-site during all phases of the work to make recommendations and to facilitate the overlay installation. This shall include, but not be limited to, surface preparation, patching material placement, overlay application, and overlay cure.

Contractor shall provide adequate shielding to protect traffic from rebound and dust during surface preparation and shot-blast cleaning work.

Contractor shall provide suitable coverings (e.g. heavy duty drop cloths) during overlay application to protect all exposed areas not to be overlaid, such as curbs, sidewalks, parapets, expansion joints, etc. Any damage or defacement resulting from this application shall be thoroughly cleaned and/or repaired to the Engineer's satisfaction and at no additional cost to the State.

- B. Storage of Materials.** Store all materials in accordance with the manufactures recommendations.
- C. Equipment**

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1. **Surface Preparation.** The contractor shall submit a list of equipment proposed to be used for surface preparation to the Engineer for approval. Pavement surfaces shall be cleaned with automatic shot-blasting units or as recommended by the overlay manufacturer. For those areas not accessible to this machinery, the surface shall be cleaned with abrasive blast cleaning equipment.

Automatic shot-blast units shall use steel shot, be self propelled and include a vacuum to recover spent abrasives. Magnetic rollers or other devices shall be used to remove any spent shot remaining on the deck after vacuuming.

2. **Application.** The distribution system shall accurately blend the epoxy resin and hardening agent, and shall uniformly apply the epoxy materials in such a manner as to provide 100% of the work area. The Contractor shall use equipment for proportioning, mixing, and applying overlay materials in accordance with the Manufacturers recommendations as approved by the Engineer.
3. **Finishing.** The Contractor shall use methods and equipment for finishing the overlay materials in accordance with the Manufacturers recommendations as approved by the Engineer.

- D. Surface Preparation.** Prior to placement of the overlay, the Contractor shall perform necessary deck patch work as indicated in the Contract Documents prior to placement of the epoxy overlay. Concrete patches shall be completely cured prior to placement of the epoxy overlay.

After patching and prior to placement of the overlay, the Contractor shall clean the entire deck surface by steel shot blasting to remove asphaltic materials, oil, grease, dirt, sealers, rust, laitance, curing compounds, paint and weak concrete materials that would inhibit successful bonding of the epoxy overlay to the wearing surface. Traffic paint lines shall be completely removed prior to placement of the overlay and reapplied upon completion of the overlay. Upon completion of shot blasting, the Contractor shall pick up spent abrasives and other loose materials by vacuum. Brooms shall not be allowed.

Clean all steel surfaces that will be in contact with the overlay according to SSPC-SP No.10, Near-White Blast Cleaning, except that wet blasting methods shall not be used.

There shall be no visible moisture present on the surface of the concrete at the time of epoxy overlay application. Immediately prior to overlay application, the deck will be tested for moisture using a transparent polyethylene sheet (4 mil) in accordance with ASTM D4263. A 600mm x 600mm plastic sheet shall be taped to the surface to be overlaid. All edges shall be sealed with tape that shall stick to the concrete substrate and shall not allow the infiltration of air. The plastic sheet shall be left in-place a minimum of two hours to detect the presence of moisture in the concrete. There shall be no moisture visible on the plastic sheet after the minimum time period has elapsed as verified by the Engineer. This test shall be performed once per deck location.

Immediately prior to application of the overlay, the Contractor shall request and receive approval to proceed from the Engineer to assure that the surface is acceptable for application of the thin epoxy polymer overlay.

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- E. Application.** The thin epoxy polymer overlay shall be applied in accordance with the manufacturer's recommendation and as approved by the Engineer.

The thin epoxy polymer overlay shall be applied within 24 hours following final surface preparation and prior to opening area to traffic. If the overlay is not applied within 24 hours the pavement shall be cleaned to the satisfaction of the Engineer at no additional cost to the State.

Expansion joints shall be protected from contaminants by masking or other methods as approved by the Engineer.

- F. Surface and Thickness Requirements.** The thin epoxy polymer overlay shall be placed according to the manufacturer's installation procedure. Application rates for epoxy and stone shall be calibrated to achieve the specified overlay thickness. The specified thickness requirements will be verified by the manufacturer's representative to the Engineer's satisfaction.

The completed overlay surface shall be free of any smooth or "glassy" areas such as those resulting from insufficient quantities of surface aggregate. Contractor shall repair such surfaces as recommended by the manufacturer and approved by the Engineer at no additional cost to the State.

- G. Curing.** The thin epoxy overlay shall reach final cure before subjecting it to traffic or any loads that would damage the overlay. Cure time is dependent upon both ambient and deck temperatures. The degree of cure and suitability of the overlay for traffic loads shall be determined by the manufacturer and approved by the Engineer.

METHOD OF MEASUREMENT

The work will be measured by the number of square meters of the thin epoxy polymer overlay applied.

BASIS OF PAYMENT

The unit price bid per square meter shall include the cost of all labor, materials and equipment necessary to complete the work. The unit price bid shall also include the cost of having the epoxy overlay manufacturer's representative onsite during the work as required.