

ITEM 01557.56 M - INSTALLATION OF FIBER REINFORCED POLYMER COMPOSITE BRIDGE DECK WITH POLYMER CONCRETE OVERLAY

DESCRIPTION

This work shall consist of installing the fiber reinforced polymer deck as shown on the plans and in accordance with this specification and overlaying the deck with a 10 mm polymer concrete wearing surface.

MATERIALS

The manufacture shall submit certified test data for all materials reflecting conformance to the requirements specified herein.

The structural adhesive used to join the panels in the field shall be Pliogrip 7779 as manufactured by Ashland Chemical or approved equal. The splice strips at the field joint locations shall be FRP composite with 3 plies of 1900 grams/square meter quad fabric and a minimum fiber volume of 45%. The constituent materials shall be E-glass reinforcement and isopolyester resin as specified for the deck panels. The non-shrink grout shall conform to NYSDOT material specification 721-03 Epoxy Polysulfied Grout. The overlay shall be Black Diamond Polymer Paving as manufactured by Kwik Bond Polymers or approved equal.

BASIS OF ACCEPTANCE

Prior to payment, the contractor shall engage an independent party to perform a diagnostic load test according to "Manual for Bridge Load Rating Through Load Testing", National Cooperative Highway Research Program Research Results Digest November 1998 - Number 234. Two copies of the load test report, with summary bridge ratings signed by a licensed professional engineer shall be provided upon completion of the test. In addition to demonstrating sufficient strength and stiffness, the analysis shall demonstrate that the connection details have sufficient horizontal shear strength to provide composite action between the deck and supporting structural members and that there is sufficient bond between the FRP composite deck and the wearing surface. Failure to demonstrate specified performance will result in rejection of the product. In this case the Supplier shall replace the product or propose a method for correcting the problem to the Engineer. Acceptance of the latter alternative is at the sole discretion of the Engineer. The cost of demonstrating acceptable performance is included in the cost of the item.

CONSTRUCTION DETAILS

The panels shall be lifted by means of suitable lifting devices at points provided by the manufacturer. Panels shall be properly aligned and leveled to the elevations shown on the plans. Allowance shall be made for the weight of personnel, materials and equipment present on the bridge at the time of erection. Variations between adjacent panels shall be reasonably leveled out by methods as recommended by the manufacturer and approved by the Engineer. Any damage to the protective gel coat shall be repaired at no additional cost.

FIELD SPLICE BONDING

The adhesive should be applied and the bond surfaces prepared in accordance with the manufacture's specifications. The Contractor shall ensure that the adhesive is applied and the splice completed within the maximum allowable time specified by the adhesive manufacturer for mating and positioning of parts to ensure good surface wetting (open time). The panels shall be securely fastened or held down to the girders in their final position before the open time for the adhesive has been reached. The joint shall not be disturbed or loaded until the adhesive has built sufficient strength to prevent deformation of the bond (fixture time). No more than 4 people will be allowed on the bridge deck at any one given time, during and after erection, until all bonds and FRP splice strips have fully cured.

SUBMITTALS

The Contractor shall submit a detailed erection procedure and working drawings for the FRP panels to the Engineer for review and approval a minimum of 30 calendar days prior to the scheduled date of erection. This submittal shall include product data, installation, and maintenance instructions for all fiberglass, resin and adhesive used to erect and join the deck panels. The submittal shall also include the proposed method of bonding the tubes together and installing the FRP splice strips. It shall address provisions such as pretreatment, achieving adequate surface wetting,

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preventing adhesive scrape-off, minimizing void formation, maintaining the required bond gap thickness, proposed nondestructive inspection techniques and repair procedures.

METHOD OF MEASUREMENT

The quantity shall be the finished plan area of the joined composite panels in square meters as shown on the drawings.

BASIS OF PAYMENT

The unit price bid per square meter shall include the cost of all labor, materials and equipment necessary to install the deck, including attaching the deck to the stringers and overlaying the deck with polymer concrete.

DISAPPROVED