

ITEM 557.9009--25 - INSTALLATION OF PRE-FABRICATED DECK PANELS

1. DESCRIPTION:

- 1.01 Under this work, the Contractor shall completely install pre-fabricated exodermic deck panels or pre-fabricated concrete filled steel grid deck panels on the existing superstructure steel of the bridge, including installation of all joints, in accordance with the plans, specifications and as directed by the Engineer.

2. MATERIALS:

- 2.01 Materials for this work shall meet the quality requirements of [REDACTED], Material Details, unless the same are altered by specific requirements under any itemized specification, or by notes on the plans, or in the proposal.
- 2.02 Pre-fabricated exodermic deck panels or concrete filled steel grid deck panels shall be furnished and/or previously stored at the site by the Contractor under other Contract Items.
- 2.03 Rapid setting concrete shall conform to [REDACTED] of the New York State Specifications, as well as the requirements of the New York Steel Construction Manual and shall be on the New York State Materials Approved List.

The following rapid set concretes, when used in conjunction with the specifications of the manufacturer, meet the requirements of this specification and [REDACTED] the Standard Specifications.

- A. **Brand:** Magna-100
- Supplier:** American Stone-Mix, Inc.
Towson, MD
[REDACTED]
- B. **Brand:** Five Star Highway Patch
- Supplier:** Five Star Products
425 Stillson Road
[REDACTED]
- C. **Brand:** Patchroc 10-61
- Supplier:** Fosroc Incorporated
Plainview, NY 11803
[REDACTED]

The Contractor may submit to the Chief Engineer an alternative rapid set concrete mix for consideration by the Authority. Consideration of an alternative submission will be based on the ability of the proposed substitution meeting the requirements of this specification, [REDACTED] of the Standard Specifications, prior concrete testing and past performance. The Thruway Authority has the right to disapprove any alternative submission in the best interest of the Authority.

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2. MATERIALS: (cont'd)

- 2.04 Test cylinders shall be prepared and the average of any three (3) break tests shall exceed:



with storage at the ambient temperature of the structure where the pour was made. Failure of the cylinder breaks to meet the minimum compressive strengths at the required intervals will result in the removal and replacement of the poured rapid set concrete by the Contractor at no additional cost to the Authority. Any damage to the structural deck and/or steel shall be repaired and/or replaced to the satisfaction of the Engineer at no additional cost to the Authority. **NO CLAIM OF DELAY** to the contract shall be made against the Authority as a result of the concrete replacement and repair work, if required.

- 2.05 All anchor bolts and fasteners shall meet the requirements of [REDACTED] the Standard Specifications for high strength bolts, nuts and washers, including material specification Subsections [REDACTED] as well as the requirements of the New York State Steel Construction Manual. All steel shall conform to the requirements of [REDACTED] and shall be galvanized.
- 2.06 Bar reinforcement shall conform with [REDACTED] as well as the requirements of the New York State Steel Construction Manual.
- 2.07 Stud shear connectors shall meet the requirements of [REDACTED] of the Standard Specifications as well as the requirements of the New York State Steel Construction Manual.
- 2.08 Shop drawings shall include the following information as a minimum:
- A. Erection procedure.
 - B. Type, size and location of crane.
 - C. Rapid concrete mix design, including admixtures, and installation procedure.
 - D. Fasteners type, strength and location of use.
 - E. Concrete repair procedure.
 - F. Tolerances.

Seven (7) copies of the working drawings shall be submitted to the Engineer for review and approval. Upon approval one copy shall be returned to the fabricator. The fabricator shall make any required changes and submit the original to the Engineer for final approval stamp. **UNDER NO CIRCUMSTANCES SHALL FABRICATION OF UNITS COMMERCE PRIOR TO APPROVAL OF THE WORKING DRAWINGS WITHOUT THE WRITTEN PERMISSION OF THE CHIEF ENGINEER.**

3. CONSTRUCTION DETAILS:

- 3.01 The Contractor shall not commence work on removing the existing bridge deck under other Contract Items and work on this Item prior to the arrival of the pre-fabricated deck panels on the job site required to complete the scheduled night's work. The Contractor shall notify the Engineer when the panels are delivered to the site and the number of panels delivered.
- 3.02 The Contractor shall schedule his work so that all travel lanes are opened to traffic by the specified hour as stated in the Contract Plans and Proposal.

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3. CONSTRUCTION DETAILS: (cont'd)

- 3.03 The Contractor shall remove the existing deck in a manner that does not damage the existing stringers which are to remain in place. After removal of the existing deck, the Contractor shall blast clean, scrape or grind the top surface of beam flanges as directed by the Engineer. The Contractor shall provide the Engineer with all facilities necessary to conduct a thorough inspection of the top flanges. The Contractor shall make repairs to the areas identified by the Engineer. The removal of the existing concrete deck and repairs to the top flange shall be completed by the Contractor under other contract items.
- 3.04 The Contractor shall commence work in a neat and workmanlike manner. The deck panels shall be placed on the structure with care. Consideration will be given to the alignment of each adjacent panel and/or existing deck.
- 3.05 The Contractor shall provide the Engineer with all facilities necessary to conduct a thorough inspection of all the erection work.
- 3.06 The Contractor shall provide to the Engineer, in advance of any erection, a detailed erection procedure which indicates the method of erection and the equipment to be used. Specific reference to maintenance and protection of traffic procedures to be employed shall be included in the erection procedure. The erection procedure shall be approved by the Engineer prior to the start of any erection work.
- 3.07 The Contractor shall supply to the Engineer detailed as-built plans of the pre-fabricated deck panels. The Contractor shall layout the deck panels in accordance with the as-built drawings and as verified by field measurements to facilitate proper fitting of the pre-fabricated panels during erection.
- 3.08 Adjacent units shall match in elevation, both with each other and with the existing deck, within the tolerance shown on the approved shop drawings. If this tolerance is not met, the Contractor shall adjust the units as indicated in the procedure shown on the approved shop drawings. The Contractor shall make all final adjustments in elevation through the use of the leveling bolts provided. The Contractor shall furnish and install all materials and labor as detailed in the Contract Plans. No vehicles will be allowed on the deck panels until deck panels are uniformly supported and secured.
- 3.09 After the panels have been adjusted to their proper elevation and all required forms have been installed, the Contractor shall install new shear studs as detailed on the plans. The studs shall be welded to the top flange of the existing stringers per Section 556 of the Standard Specifications as well as the requirements of the New York State Construction Manual. The shear studs shall be furnished and installed by the Contractor under other Contract Items. The Contractor has the option of installing the studs prior to setting the pre-fabricated panels or to temporarily set the pre-fabricated panels in place, mark out the stud locations, remove the panel and then weld the shear studs to the top flange of the stringers.
- 3.10 The surface of all joints and haunches shall be free of any material such as oil, grease or dirt which may prevent bonding of the approved rapid set concrete mix and bonding compound if its use is recommended by the rapid set concrete manufacturer. All precast concrete surfaces that will be in contact with the rapid set concrete or bonding compound shall be sandblasted, using care to protect the galvanized grid and rebar as much as possible, within 24 hours of the installation of the shear key and haunch material. The vertical concrete surfaces shall be thoroughly coated with a thin coating of the rapid set concrete mix or bonding compound meeting the requirements of Section 721-02 if recommended by the manufacturer of the approved rapid set concrete. Prior to placement of the rapid set concrete material the bottom of the joint and haunch shall be sealed with an approved foam backer rod or similar product to prevent material loss.

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3. CONSTRUCTION DETAILS: (cont'd)

- 3.11 After the shear studs have been installed, including breaking the ceramic ferrules around the welded studs, the Contractor shall clean the top flange of the existing stringers and complete the haunches. The rapid set concrete required for the haunches, joints and closure pours shall be installed as recommended by the manufacturer and as directed by the Engineer. The following conditions regarding the mixing and placement of the rapid set concrete shall be followed:
- A. The approved rapid set concrete shall be mixed in a mobile mixer. No hand mixing of the rapid set concrete will be allowed. The Contractor shall have a minimum of two (2) mobile mixers on site, calibrated and operational for each night's work.
 - B. No panel placement below manufacturer's recommended minimum or above maximum temperature will be allowed.
 - C. No placement of the rapid set concrete mix shall be allowed when the ambient air temperature falls below 45°F or as directed by the Engineer in accordance with the manufacturer's recommendation.
 - D. All precast concrete surfaces shall be sandblasted clean prior to placement of the rapid set concrete mix.
 - E. The rapid set concrete mix and epoxy bonding compound, if recommended by the rapid set concrete manufacturer, shall be placed by the specifications of the approved manufacturer.
 - F. The rapid set concrete shall be wet burlap cured or as recommended by the approved manufacturer.
 - G. A field representative of the approved rapid set concrete manufacturer shall be on site to verify that the field conditions and placement procedures follow the manufacturer's specifications.
 - H. No vehicles of any type will be allowed on the deck panels before the rapid set concrete has reached a minimum compressive strength of [REDACTED]
- 3.12 After all installation work is complete, remaining concrete defects and lifting holes shall be repaired with approved concrete repair material. The methods of repair shall be approved by the Engineer prior to the work being performed.

4. METHOD OF MEASUREMENT:

- 4.01 The work will be measured as the number of square feet of pre-fabricated deck panels installed as approved by the Engineer. Measurement shall be taken as the horizontal plane projection of the top of the structural slab. Measurement will be taken from the center to center of the transverse and longitudinal joints and from the fascia of the new pre-fabricated deck panels as shown on the Contract Plans. No deduction will be made for joint or chamfers.

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5. BASIS OF PAYMENT:

- 5.01 The unit price bid per square foot shall include the cost of all labor, materials and equipment necessary to complete the work as approved by the Engineer, which includes the cost of installing rapid set concrete and bonding compound, if specified by the manufacturer, in the haunches and joints. The cost for the removal of the existing concrete deck (including the existing precast deck panels) the existing shear studs and leveling bolts, to furnish and install shear studs and to furnish the pre-fabricated deck panels shall be paid for under their respective items.
- 5.02 No payment will be made for any work necessitated by damage or defacement attributable to the Contractor's operations.
- 5.03 The unit price bid per square foot for this Item shall include the following:
 - A. The cost to furnish any erection equipment.
 - B. The cost to furnish, install and remove any temporary bracing, jacks, form work and bearing material as required to install the panels.
 - C. The cost to furnish and install the approved rapid setting concrete and bonding compound, if recommended by the manufacturer, including mixing, sealing the joints and/or haunches and the installation of the rapid set concrete material.
 - D. The cost to furnish, install and remove the temporary material required in the joint between the pre-fabricated deck panels and the existing deck between stages.
 - E. The cost to blast clean the top surface of beam flanges.