

ITEM 556.0298--25 - FABRICATE, FURNISH AND DELIVER PRE-FABRICATED GRID DECK PANELS TO JOB SITE

1. DESCRIPTION:

- 1.01 Under this work, the manufacturer designated by the Contractor shall fabricate, furnish, and deliver to the job site pre-fabricated grid deck panel(s) as shown on the Contract Plans and in accordance with the provisions of the Contract Documents. The Contractor shall select one (1) type of grid deck panel as manufactured by the following designed manufacturers:
- 1.02 **Steel Grid Panel Manufacturers:** The steel grid portion of Exodermic decks must be purchased from participating BGFMA licensed manufacturers. Currently, the following are participating BGFMA licensed manufacturers:

Bailey Bridges, Inc.
IDSI
LB Foster

Contact [REDACTED]
Contact [REDACTED]
Contact [REDACTED]



Further licensing and participating status may be obtained from:

BGFMA
Attn: [REDACTED]
300 East Cheery Street
North Baltimore, OH 45872
Phone: [REDACTED]
[REDACTED]

The Engineer shall be notified of the name, address, telephone number, and contact person of the deck panel manufacturer. The panels shall be delivered and stored in a prior approved manner at or near the bridge located at [REDACTED] of the New York State Thruway. The Contractor shall submit, to the Authority for approval, a delivery site at least fourteen (14) days prior to the first scheduled date of delivery.

2. MATERIALS:

- 2.01 Materials for this work shall meet the quality requirements of [REDACTED], unless the same are altered by specific requirements under any itemized specification, or by notes on the plans, or in the proposal.
- 2.02 It shall be the Contractor's responsibility to advise the Engineer of the sources of proposed materials sufficiently in advance of their use so that proper tests may be made. As soon as the contract is awarded, the Contractor shall notify the Authority of the name and address of the fabricator of the type of deck panel selected and list the specific location at which the panels will be manufactured.
- 2.03 The High Performance concrete shall have a minimum 28 day compressive strength of [REDACTED] shall conform to [REDACTED] of the Standard Specifications and proportion according to the mix criteria below.

Use a Water-Reducing and Retarding Admixture meeting the requirements of [REDACTED] of the Standard Specifications to delay setting until after final concrete placement and finishing and produce the desired slump without exceeding the maximum water-cementitious material ratio.

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2. MATERIALS: (cont'd)

2.03 (cont'd)

MIX CRITERIA

| | | |
|---|--|--|
| Cement (lbs./c.y.) | | |
| Fly ash (lbs./c.y.) | | |
| Microsilica (lbs./c.y.) | | |
| Sand - % of total aggregate (solid volume) | | |
| Maximum water/cementitious material ratio (725 lbs.total) | | |
| Desired Air (%) Allowable Air (%) | | |
| Desired Slump (inches) Allowable Slump (inches) | | |
| Aggregate gradation | | |

NOTE: Criteria given for design information is based on a fine aggregate fineness modulus of [REDACTED]. Determine the mixture proportions by using fineness modulus and bulk specific gravities (saturated surface dry for aggregate). Compute proportions according to New York State Thruway Authority written instructions.

Supply either a densified powder or slurry form of microsilica admixture whose brand name appears on the New York State Department of Transportation Materials Bureau Approved List. Use only one brand for any structural element. Provide written certification from the Supplier that the microsilica meets the requirements of the Materials Bureau. Include the following data: fineness, silica content, total chloride ion content, solids content for slurries, and moisture content for densified powders.

Agitate the slurry as necessary to prevent separation. Remove and replace slurry that reaches a temperature less than 32°F., at no cost to the New York State Thruway Authority.

The designated Inspection Engineer will take a [REDACTED] sample directly from the storage container, for each days placement, for testing by the designated inspection agency.


If densified powder is used - weigh cumulatively in the following order: cement, fly ash and microsilica. Base the batching tolerance of [REDACTED] on the total weight of cementitious material, for each material draw weight.

If microsilica slurry is used - use proportioning equipment approved by the Designated Inspection Engineer. Add through an existing automation system or a two stop, off-line automated, batching system meeting the following requirements:

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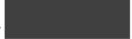

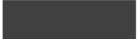
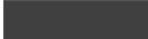












2. MATERIALS: (cont'd)

2.03 (cont'd)

- | | | |
|---------------------|---|--|
| Delivery accuracy | - |  |
| Program quantity | - | |
| Batching tolerance | - | |
| System interlocks | - | |
| Print requirements: | | |
| a. | Date and time | |
| b. | Truck number (or alternate method relating microsilica to batch ticket) | |
| c. | Delivered quantity (gallons, nearest tenth) | |

Locate the control box/printer for a two stop, off-line batching system at the batch plant operator's work station unless otherwise approved by the designated inspector.

Calibrate in accordance with procedures approved by the designated Inspection Engineer. Recalibrate the entire system if part or all of the off-line system is moved.

- 2.04 Bar reinforcement shall be galvanized in accordance with 
- 2.05 Fabric Reinforcement shall be galvanized in accordance with Item 
- 2.06 Manufacture the structural steel grid including the steel grating with the properties and to the dimensions shown on the plans, shop drawings, and in accordance with  the Standard Specifications as well as the requirements of the New York State Steel Construction Manual. Prior to grid manufacture, check the proposed panel layout and verify all shop drawing dimensions and cross slopes for accuracy. If the exodermic deck panels are selected all ,  meeting the requirements of  of the Standard Specifications. Prior to welding, an approved Procedure Qualification Record (PQR) and Welding Procedure specification (WPS) are required in accordance with the New York State Steel Construction Manual. After the attachment of all edge bars, leveling devices and other components, galvanize the grid in accordance with   The panel layout shown on the contract plans is suggested. The fabricator shall develop the layout and detail it on the shop drawings.
- 2.07  stud shear connectors shall meet the requirements of  of the Standard Specifications as well as the requirements of the New York State Steel Construction Manual.
- 2.08 All fasteners, including the concrete inserts casted in the pre-fabricated panels shall meet the requirements of  of the Standard Specifications for , including material specification  as well as the requirements of the New York State Steel Construction Manual. All fasteners shall conform to the requirements of  and shall be  Leveling bolts and nuts shall be .
- 2.09   shall conform to  for forms and shall be furnished in the gauge specified on the contract plans and shop drawings. All metal forms shall be protected during shipment to the site to retain their shape until deck panel installation.
- 2.10 Shear keys shall be filled with a rapid set concrete meeting the requirements of   Prior to the installation of the shear key material the surface of the shear key shall be sandblasted clean. No additional aggregate, , will be allowed without the manufactures approval when field mixing. The type of material used will be clearly shown on the approved shop drawings. The shear key material shall be mixed in a mobile mixer, no hand mixing will be allowed.

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2. MATERIALS: (cont'd)

- 2.11 All concrete repair material shall meet the requirements of the Contract Documents and/or be approved by the Engineer.
- 2.12 Shop drawings shall include the following information as a minimum:
- A. Plan layout, including length, width, skew angle and orientation;
 - B. Concrete mix design including admixtures;
 - C. Concrete surface finish;
 - D. Concrete compressive strength;
 - E. Structural steel type and grade, degree of steel cleanliness and galvanizing procedures;
 - F. Fabrication and curing procedures;
 - G. Lifting details;
 - H. Cross-sections showing structural depths and reinforcement;
 - I. Fastener type, strength and location of use;
 - J. Reinforcement schedule;
 - K. Tolerances. Use the Bridge Grid Flooring Manufacturers Association current standards for dimension 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 COMMENCE PRIOR TO APPROVAL OF THE WORKING DRAWINGS WITHOUT THE WRITTEN PERMISSION OF THE CHIEF ENGINEER.

- 2.13 Minor honeycomb areas less than one [REDACTED] wide where [REDACTED] is not exposed shall be repaired with an approved concrete repair material. Units that have honeycombed areas where reinforcing is exposed and/or units are cracked or damaged may be rejected at the Engineer's discretion. Rejected units shall be repaired or replaced in accordance with a written repair procedure approved by the Engineer.
- 2.14 Structural steel will be inspected and approved by the Engineer for compliance with the contract documents prior to casting. Structural steel not meeting the requirements of the contract documents shall be replaced with acceptable steel at no additional cost. All structural steel to be embedded in concrete shall be clean and free from dirt, oil, grease or paint.

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3. CONSTRUCTION DETAILS:

- 3.01 The steel members and steel grating shall be fabricated to the dimensions and properties as shown on the plans and in accordance with [REDACTED] as well as the requirements of the New York State Steel Construction Manual. It shall be the Contractor's responsibility to field verify all dimensions in order to make necessary changes prior to fabrication. The panel layout shown in the Contract Plans is suggested. The fabricator shall develop the layout and detail it on the shop drawings. After the attachment of all edge bars; leveling screws and rebar shear studs, the steel and grating shall be galvanized according to [REDACTED] and grating shall be fabricated to proper roadway cross slopes prior to [REDACTED].
- 3.02 After the steel members and grating have been [REDACTED] they shall be inspected for defects in the [REDACTED] coating. Any defects shall be repaired as specified in [REDACTED] of the Standard Specifications as well as the requirements of the New York State Steel Construction Manual.
- 3.03 Casting beds conforming to the dimensions of the various types of panels shall be constructed by the manufacturer. The materials used for the casting beds shall be sound and durable so as to permit their re-use throughout the casting operation. If the panels are cast upside down (at the election of the manufacturer) the bottom of the form, which will produce the finished top surface of the concrete deck, shall be textured so that the finished concrete deck will have a fine surface as specified in [REDACTED] of the Standard Specifications. If the panels are cast right side up, a fine finish shall be applied as specified in [REDACTED] the Standard Specifications.
- 3.04 Concrete inserts required for precast panels shall be casted in the pre-fabricated deck panels. The number and locations of the inserts shall be as detailed on the Shop Drawings.
- 3.05 If the manufacturer elects to cast upside down, the steel members and grating shall be placed upside down into the concrete mix already in place in the forms. The bar reinforcement shall have been placed in the forms prior to placing the concrete. The reinforcing bars shall be supported on approved bar chairs at the proper depth in the forms. The bar chairs shall have plastic protectors where they contact the forms.
- 3.06 The concrete shall have a slump which will insure the desired 28-day strength of [REDACTED], yet allow the steel members or grating to be placed in the wet concrete mix to the proper depth without excessive force being exerted on the member. The use of vibrators attached to the forms or placement of the forms on vibrating shock tables will be permitted provided excessive vibration causing segregation of the aggregate in the concrete mix does not occur. The fabricator may use equipment which would apply steady, even downward pressure to the member to embed the steel member or grating to the proper depth in the forms.
- 3.07 Test cylinders shall be prepared and the average of any three (3) break tests shall exceed:
- [REDACTED] prior to allowing the panels to be lifted from the forms.
 - [REDACTED] @ 28 days

with storage at the ambient temperature of the structure where the pour was made. Cylinders shall be cast from each truck-load of ready-mix concrete or from each batch of ten (10) cubic yards of concrete, if mixed at a manufacturing plant. 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 concrete by the Contractor at no additional cost to the Authority. The fabricator shall submit the concrete design mix to the Engineer for approval prior to commencement of work.

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3. CONSTRUCTION DETAILS: (cont'd)

- 3.08 The panels shall remain in the forms a minimum of 48 hours covered with wet burlap. After 48 hours, the panels shall be removed from the forms when they have attained the minimum strength specified. Once removed from the forms, the panels shall be cured with a membrane curing compound per Subsection 704-03, Membrane Curing Compound, Cold Weather Curing per Section 704-03. Rapid curing methods will not be allowed nor considered for approval.
- 3.09 The completed panels shall be marked with their proper identification number and marked at either end with the adjoining panel number for proper orientation in the field. No more than three panels will be permitted to stack upon each other during storage or shipment. Panels shall be stored and shipped right-side up, and wood lagging shall be used to prevent concrete or galvanized coating damage. Proper support shall be provided at all changes in panel cross section, or grade during storage and transportation.
- 3.10 The pre-fabricated panel shall be delivered to the job site free from any defects and bearing the proper identifying marks. The Contractor shall store the deck panels at the project on elevated supports and provide for the proper bearing of the panel above ground.
- 3.11 If the pre-fabricated panels are stored within thirty feet (30') of the edge of the travel lanes of the Thruway, they shall be protected with temporary concrete construction barrier. Storage locations are subject to the approval by the Authority prior to delivery.
- 3.12 All ground surface preparations, timber blocking or slimming for stacking the panels, concrete construction barrier as required for protection, and all necessary precautions for safe storage shall be included in the amount paid for under this item.

4. METHOD OF MEASUREMENT:

- 4.01 The work will be measured as the number of square feet of pre-fabricated deck panels delivered to the job site and stored and protected as required. Measurement will be taken as the horizontal plane projection from outside edge to outside edge of the panel, including concrete, steel grid, and reinforcement. No deduction will be made for joint or chamfers.

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, which includes the cost of transporting, storing and protecting the pre-fabricated deck panels from damage as well as the traveling public with concrete construction barriers as necessary.
- 5.02 Basis of acceptance shall be based on the Engineer's verification that each unit delivered to the site conforms to the dimensions and specifications of the Contract Plans and documents, and has not been damaged during transport and/or handling.
- 5.03 The Contractor is responsible for meeting any intermediate and final completion dates defined in the proposal. Therefore, the Contractor is advised to take all necessary field measurements and to order the pre-fabricated deck panels early in the contract to avoid any potential delays. Any cost associated with delays in the delivery of these panels shall be completely paid by the Contractor, and will not be the subject of a claim against the Authority. Liquidated damages, as defined in the Proposal, will be assessed for any delay in the contract schedule.