

PROJECT DESCRIPTION

This project, located near Rock State Park in Harford County, is for deck replacement and rehabilitation to Bridge No. 12016 on MD 24 over Deer Creek.

The major items of work to be performed under this Contract include the following:

- (a) Replace the existing concrete deck with a fiber reinforced polymer (FRP) deck.
- (b) Cleaning and painting of the steel truss.
- (c) Rehabilitation of abutment back walls and beam seats.
- (d) Installation of riprap for scour protection along both abutments.
- (e) Paving of bridge approach roadway.
- (f) Pavement marking.

SPECIFICATIONS

All work on this project shall conform to the Maryland Department of Transportation, State Highway Administration's Specifications entitled, "Standard Specifications for Construction and Materials" dated October 1993 and the companion manual entitled "General Provisions for Construction Contracts," revisions thereof, or additions thereto, and the Special Provisions included in this Invitation for Bids.

EMPLOYMENT AGENCY

The Maryland Department of Human Resources is located at:

Harford County

2 South Bond Street
Bel Air, Maryland 21014
(410) 836-4602
Fax No. 836-4640

Manager: Geraldean Worthington

NOTICE TO CONTRACTOR

DISINCENTIVE. The Contractor is advised that there is a disincentive monetary deduction for failure to open the roadway to traffic by the specified Open to Traffic date, which is in addition to the liquidated damages stated in the Proposal Form portion of this Invitation for Bids. Refer to the Project Schedule and Completion article located elsewhere in these Special Provisions for the terms of the disincentive.

WORKING DRAWING SUBMISSIONS. The last sentence of the first paragraph of TC-5.02, "No work is to be started before receipt of the Notice to Proceed." shall not apply to the submission of fiber reinforced polymer (FRP) deck working drawings for this project. The apparent low bidder may submit FRP deck working drawings immediately after the bid opening in an effort to maintain a timely progress schedule.

Should the apparent low bidder not be awarded the Contract, all costs accrued for the preparation of the FRP deck working drawings and any FRP deck fabrication will be handled in conformance with GP-8.10.

MINIMUM REQUIREMENTS FOR BIDDERS. Refer to 413.01 for minimum requirements pertaining to Contractors and subcontractors performing any cleaning and painting operations.

LEAD. The Contractor is alerted to the fact that paint on the existing bridge contains "LEAD".

The Certification of Insurance or endorsement shall affirmatively state that claims arising from cleaning, including lead based paint removal, and painting operations are covered.

TRAINING. The Contractor's structural steel lead paint abatement supervisor shall have completed a Supervisors Training Course approved by the Maryland Department of the Environment. For details contact the Environmental Lead Division of the Maryland Department of the Environment, 2500 Broening Highway, Baltimore, Maryland 21224.

PAINT INSPECTOR NOTIFICATION. The Contractor is alerted to 413.03 of this Invitation for Bids for notifying the Bridge Inspection and Remedial Engineering Division for inspection of the cleaning and painting on this project.

RIGHT-OF-WAY STATUS. No right-of-way is required for this project.

SPECIAL PROVISIONS

CONTRACT NO. HA2095180

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REQUEST FOR INFORMATION. The Administration's Design Offices will not respond to telephone requests for information or questions concerning this Invitation for Bids that would materially affect the bid.

All requests for information or questions shall be legibly written and shall be submitted by mail or FAX to:

Mr. Earle S. Freedman
Director, Office of Bridge Development
Attention: Jeff Robert
707 North Calvert Street
Baltimore, MD 21202
or
FAX at (410) 209-5002

Each request for information or questions shall include the Contract number and the name and address of the originator.

PROJECT SCHEDULE AND COMPLETION

This project has been scheduled to limit the road closure/detour to the period that matches school closures for summer break. A Notice to Proceed will be issued on or before April 23, 2001, however, the road cannot be closed nor any traffic interrupted prior to June 14, 2001. The Open to Traffic date is August 24, 2001, and the project completion date is established as September 21, 2001.

The Contractor is advised that in order to open the road to traffic by the Open to Traffic date, it may be necessary to provide multiple crews, multiple shifts, work overtime and weekends.

For scheduling purposes, the Contractor shall note that the stream restriction for performing work in Deer Creek is from March 1st to May 31st. Refer to the Permit included in this Invitation for Bids for additional information.

Limited Notice to Proceed. To avoid unnecessary delays a Limited Notice to Proceed will allow the Contractor to complete the following activities prior to closing the road to traffic:

- (a) Material sources may be submitted for approval.
- (b) Materials may be ordered as appropriate.
- (c) Certification of public liability insurance.
- (d) Working drawings may be submitted for review.
- (e) All detour signing shall be installed, covered, and ready for use.
- (f) All perimeter sediment and erosion controls shall be placed to the fullest extent possible.
- (g) Submission of a detailed schedule of operations to the Engineer for review and approval. This schedule shall outline the exact sequence of construction and how the work will be completed to have the roadway open to traffic by the specified Open to Traffic date. The schedule shall include critical delivery dates for materials such as Fiber Reinforced Polymer Deck.
- (h) Engineer's Field Office shall be setup and ready for use by June 1, 2001.

The Contractor shall notify local emergency services and the park service in writing and by phone two weeks prior to closing the road to traffic.

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The contact person for the park service is:

Mr. Arnold Norden
State Forest & Park Service
Tawes State Office Building E-3
580 Taylor Avenue
Annapolis, MD 21401

Once school is closed for the summer, the detour and road closure may occur. If the actual school closure date occurs after the anticipated closure date given above, the Open to Traffic date will be adjusted calendar day for calendar day.

Upon closing the roadway and commencing work, the Contractor shall proceed in an efficient and continuous manner. The Contractor will be allowed to open the road to traffic prior to completing all work.

For the roadway to be Opened to Traffic, the following conditions shall be met at each location:

- (a) The structural work is completed, including installation of curbs and railings and bridge painting.
- (b) The roadway work is basically complete including installation of all traffic barrier and pavement markings.
- (c) The detour has been removed and traffic on MD 24 is in the final configuration.

Temporary lane closures will be permitted within the time restrictions specified in the Traffic Control Plan for final clean-up, seeding and mulching, removal of traffic control signs, riprap installation, and removal of sediment and erosion controls after the roadway is open.

Disincentive. In addition to the liquidated damages stated in the Proposal Form portion of this Contract, an additional disincentive will be assessed for failure to have the road open to traffic by the specified Open to Traffic date. A disincentive of \$4,700.00 per calendar day will be assessed for each day beyond the specified date until the road is open to traffic. Weather conditions (cold, precipitation, etc.) will not be a basis for time extension. All remaining work shall be completed within the Contract time listed in the Proposal Form.

If the roadway is opened to traffic and the Contract time is exceeded, liquidated damages (\$785.00 per calendar day) will be assessed. If the roadway is closed to traffic and the Contract time is exceeded, both the liquidated damages (\$785.00) and the disincentive (\$4,700.00) will be assessed for a total of \$5,485.00 per calendar day until the roadway is reopened. After that time, the liquidated damages of \$785.00 per calendar day will be assessed until all work is completed.

**CATEGORY 400
STRUCTURES**

FURNISHING FIBER REINFORCED POLYMER DECK PANELS

DESCRIPTION. This work shall consist of furnishing fiber-reinforced polymer (FRP) deck panels in conformance with these specifications, the Plans, and as directed by the Engineer. This work shall include the pultrusion of the tubes, bonding of tubes into the finished panels, all necessary holes and closeouts, and all other operations necessary to complete the work.

MATERIALS.

Deck System Manufacturer. The FRP deck system shall be furnished by Martin Marietta Composites, Inc. of Raleigh, NC. The contact person is Greg Solomon (919) 788-4367. No alternative deck systems will be accepted.

Finished Geometric Tolerances. The finished dimensions of the deck shall conform to D 3917. The finished dimensions of the tubes, deck panels, and sleeves shall also conform to the following supplemental tolerances:

DECK TUBES AND PANELS	
PROPERTY	TOLERANCE
Overall depth of tube	±1/16 in.
Tube out-of-straightness	±3/16 in./25 ft
Panel length and width	±1/8 in.

Submittals. Shop drawings shall be submitted as specified in Section 499, and shall include the following information as a minimum:

- (a) Cross-sectional and overall dimensions.
- (b) Fiberglass architecture, including ply thickness, fiber orientation, and stacking sequence.
- (c) Material references.
- (d) Recommended lifting method and locations.
- (e) Instructions and recommendations for panel delivery, storage and installation.

Panel Identification. The deck panels shall be labeled with identification numbers consistent with the numbering system shown on the Plans.

CONSTRUCTION.

Delivery and Storage. The manufacturer will be responsible for the delivery of the deck panels, adhesive, and field splice material to the project site. Unloading and storage of all of the material will be the responsibility of the Contractor. The Contractor shall provide a dry storage area at the bridge site for all of the manufacturer's materials. The Contractor shall be responsible for any damage that occurs to the FRP deck panels at the bridge site.

Structural Adhesive for Field Bonding of Panels. The manufacturer will provide, mix, and dispense the structural adhesive for the bonding of the panels during installation.

FRP Field Splices. The manufacturer will provide a representative to assist the Contractor with the installation of these strips.

MEASUREMENT AND PAYMENT. Fiber Reinforced Polymer Deck will not be measured but will be paid for at the Contract lump sum price. The payment will be full compensation for development and preparation of working drawings, and the manufacture and delivery of the fiber reinforced polymer deck panels, adhesive, and field splice material to the project site. The amount set forth in the Schedule of Prices is a fixed price for all bidders and shall not be changed. Any bid other than the amount noted in the Schedule of Prices may cause the bid to be considered irregular. Payment to the manufacturer must be made by the Contractor immediately upon receipt of payment from the Administration for the Fiber Reinforced Polymer Deck lump sum item.

**CATEGORY 400
STRUCTURES****UNLOADING, STORING, AND ERECTING
FIBER REINFORCED POLYMER DECK PANELS**

DESCRIPTION. This work shall consist of furnishing the necessary labor, materials and equipment to erect the fiber reinforced polymer (FRP) deck panels in conformance with these specifications, as shown on the Plans, and as directed by the Engineer.

MATERIALS. Not applicable.

CONSTRUCTION.

Storing and Handling. Site handling and erection shall be performed with acceptable equipment and methods, and by qualified personnel in conformance with the manufacturer's recommendations.

The panels shall be lifted with approved lifting devices and supported during stockpiling and erection operations only at the lifting or supporting points as shown on the shop drawings.

The panels shall be kept flat and true to prevent warping or twisting of the panels during lifting and storing. The panels shall not be turned or placed on their sides or with the top surface down. Lifting of the panels from one edge is prohibited.

All panels shall be stored on pallets or other devices that will keep them at least 4 in. above the ground or storage surface. The panels shall be protected with covers that are impervious to sunlight and weather to protect them from ultraviolet light, and keep the panels clean and dry. Stacked panels shall be supported on unyielding supports and shall be separated by battens across the full width of each panel.

Panels damaged by improper handling, storing, or erection shall be repaired or replaced, as determined by the Engineer, at no additional cost to the Administration.

Erection. Panels shall be lifted by means of suitable lifting devices at points specified by the manufacturer.

Panels shall be properly aligned and installed to the elevations shown on the Plans. Allowances shall be made for the weight of personnel, materials and equipment present on the bridge at the time of erection.

Field Splice Bonding. The manufacturer will provide, mix, and dispense the structural adhesive for bonding of the panels as well provide the materials necessary for the installation of the FRP splice strips. The manufacturer will also provide a representative to assist the Contractor with the installation of these strips. All personnel placing field splice strips shall be approved by the manufacturer prior to performing the work.

The adhesive shall be applied and the bond surfaces prepared in conformance with the manufacturer'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 six people will be permitted on the bridge deck at any given time, during and after erection, until all bonds and FRP splice strips have fully cured unless otherwise approved by the manufacturer and the Engineer.

Personnel Requirements. The FRP panel manufacturer will provide a technical representative during the erection and bonding of the panels as well as the installation of the FRP splice strips. The technical representative will be experienced in the material and performance characteristics of the FRP and adhesive materials, as well as the panel handling requirements. The technical representative will act in an advisory capacity and will report to the Contractor and the Engineer any operations and procedures that are considered by the representative as being detrimental to the integrity of the deck system.

Submittals. The Contractor shall submit a detailed erection procedure and working drawings for the FRP panels to the Engineer for review and acceptance 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.

MEASUREMENT AND PAYMENT. Installation of Fiber Reinforced Polymer Deck will be measured and paid for at the Contract lump sum price. Payment will be full compensation for installation of the deck panels including the splice strips, and for all material, labor, equipment, tools and incidentals necessary to complete the work.

**CATEGORY 400
STRUCTURES**

**NONSHRINK GROUT FOR HAUNCHES
AND SHEAR STUD POCKETS**

DESCRIPTION. This work shall consist of furnishing the necessary labor, materials and equipment to place nonshrink grout in the haunches and shear stud pockets in conformance with these specifications, as shown on the Plans, and as directed by the Engineer. This work shall include the forming, furnishing, mixing, placing and curing of the grout, and all other operations necessary to complete this work.

MATERIALS. The nonshrink grout shall be a flowable nonmetallic grout meeting the requirements of C 1107, Grade C. The compressive strength specimens shall be produced from a mixture of the dry grout and sufficient water to produce a flowable mixture.

PHYSICAL PROPERTY	TEST METHOD	SPECIFICATION LIMITS
Flow, %	C 109	125 - 145
Expansion at 3, 14, and 28 days, %	C 1090	0.0 - 0.1
Expansion at 3 and 14 days, % max	C 1090	Expansion at 28 days
Compressive Strength at 7 days, psi min	C 109	5000
Compressive Strength at 14 days, psi min	C 109	5800
Initial Set, minutes min	C 403	60
Relative Dynamic Modulus of Elasticity after 300 Cycles, % min	T 161, Procedure B	80

Submittals. The grout product will be accepted provided that certified test data is submitted that reflects conformance with the requirements stated herein. The Contractor shall submit three copies of information relating to the acceptability of the grout to the Engineer for review and approval at least 45 calendar days prior to placement of the grout. The submittal shall also include the Contractor's proposed method and sequence of grout placement, formwork, and venting details. Construction shall not begin until approval is obtained.

CONSTRUCTION.

Mixing. Mixing shall be done with rotating paddle-type mixing machines and shall be continued until all ingredients are thoroughly mixed. Once mixed, grout shall not be retempered by the addition of water and shall be placed within 1 hour.

Forming and Placing. The forms shall be constructed of steel angles and shall retain the grout without leakage. The interface between the tops of the forms and the deck panels shall be sealed by placing an adhesive backed foam bed on the top of the form. The forms shall be designed to remain true to shape and rigidly support the weight of the FRP panels and all materials, equipment, and personnel necessary for placement of the grout. Forms shall be set and maintained to the lines and grades specified on the Plans and in a manner approved by the Engineer.

All tie rods, bolts, anchorages and other forming hardware that is incorporated into the haunches shall be galvanized. Tie rods, bolts and anchorages, within the forms shall be constructed so as to permit their removal to a depth of at least 1-5/8 in. from the face without injury to the concrete. When wire ties are used, they shall be cut back at least 5/8 in. from the face of concrete upon removal of the forms. All fittings for metal ties shall be designed so that, upon their removal, the cavities that are left will be of the smallest practical size.

The grout shall be placed in a manner and sequence so that all voids are completely filled. Vent holes or tubes in the formwork shall be sized and located as necessary to prevent air entrapment. Pumping of the grout will be required if the Contractor's methods of placement do not achieve full coverage of the grout, as determined by the Engineer.

The grout shall be placed continuously. Delivery, mixing and placement shall proceed so that there will not be an interruption of more than 15 minutes duration in the placing of the grout over a single girder.

Finishing and Curing. The exposed top surface of the grout shall be struck off flush with the top of the deck and finished with a float. The surface shall be given a final finish by brushing with a bristle brush. The brush shall be drawn across the grout at right angles to the center line of the roadway.

The exposed surfaces of the grout shall be wet cured for a minimum of 3 days or as directed by the Manufacturer and approved by the Engineer. The method of wet curing shall be in conformance with 414.03.08.

Application of Loads. Vehicles, equipment and materials will not be permitted on the bridge until the grout has achieved a minimum compressive strength of 5800 psi.

MEASUREMENT AND PAYMENT. Nonshrink Grout for haunches and shear stud pockets will be measured and paid for at the Contract unit price per cubic foot. The payment will be full compensation for submittal preparation, all materials including steel angles, labor, equipment, tools, and incidentals necessary to complete the work.