

**DEPARTMENT OF CONSERVATION and NATURAL RESOURCES
STATEMENT OF WORK for**

**FURNISHING BRIDGE MATERIALS
Sinnemahoning State Park**

I. SCOPE OF WORK:

The Department of Conservation and Natural Resources (DCNR), Sinnemahoning State Park, requires furnishing of all materials for one (1) fully engineered pedestrian/snowmobile bridge of Fiber Reinforced Polymer (FRP) composite construction...

**Bridge Dimensions:
30'-0" long x 6'-0" wide**

...for delivery to Sinnemahoning State Park; 4843 Park Road; Austin, PA 16720.

Work shall include, but is not limited to the design and delivery of the bridge, deck, and railings; design of the abutments; and furnishing all materials for assembly of a bridge by others. The construction of the bridge abutments, and/or footings and the erection of the bridge shall be by the Department.

Questions regarding the technical aspects of this bid should be directed to Gene Strick at 814-486-5637, ext.301, Monday through Friday from 8:00 am to 4:00 pm. Questions regarding the bidding or contractual aspects of this bid should be directed to Steve Brown at 717-783-3309, stevebrown@pa.gov.

II. CONTRACT TASKS:

The pre-fabricated bridge noted below shall be completed in performance of the contract.

This contract will consist of delivery of all materials noted below for one (1) complete fiberglass bridge to DCNR/Sinnemahoning State Park. The project location is at the Sinnemahoning State Park Office; 4843 Park Road; Austin, PA 16720. **GPS DD:** Lat. 41.47341 Long. -78.05653

III. CONTRACTOR REFERENCES:

After bid opening, and prior to awarding of the contract, the Department has the right to request references (names, addresses, and telephone numbers) of similar work performed in the previous two (2) years as proof of qualifications to perform the work involved in this contract.

IV. MATERIALS:

The bridge will include the following:

- The manufacturer shall submit a color chart and the Department shall choose a color from the standard colors.
- Railings to a height of fifty-four inches (54") on both sides with railings to be designed to meet ASHTO standards for snowmobiles and pedestrians
- All hardware for bridge assembly will be included.
Note: All hardware will be corrosion/rust resistant
- Three inches (3") thick x Twelve inches (12") wide minimum #2 SYP with S4S finish pressure treated wood decking.
- Anti-slip surface on decking.
- Directions for assembly/disassembly to accompany bridge.
- Bridge pieces will be labeled to facilitate assembly.
- Bridge is to be delivered to the park office. It will be unloaded by the Department in an area designated by the park manager.
- Bridge pieces/sections should be light enough for two (2) people to hand carry.
Note: Maximum weight distribution approximately 75lbs. per person
- Bridge pieces must be easily assembled on site without the use of heavy equipment.

- Common hand tools will be the only tools necessary for assembly of bridges

Additional Details for bridge:

- Foundation/Abutment specifications and design shall be included with bids, but supplies are not to be included in bid price (DCNR will be responsible for acquiring foundation/abutment supplies)
- Bridge drawings and calculations shall be sealed by a Professional Engineer registered in the Commonwealth of Pennsylvania
- Supplier will call 814-647-8401 to set-up delivery time, which will be sometime Monday through Thursday 8:00 am to 3:00 pm.
- Bridge will be unloaded at...
 Sinnemahoning State Park
 4843 Park Road
 Austin, PA 16720
- Delivery date will be no later than November 30, 2014

Bidder shall provide material certifications for wood, bolts, and FRP members.

Allow three (3) weeks for Department review of calculations submission.

The bridge will meet or exceed the following specifications:

PRE-FABRICATED BRIDGE SPECIFICATIONS

1.0 GENERAL

1.1 SCOPE

These specifications are for a fully engineered pedestrian/snowmobile bridge of Fiber Reinforced Polymer (FRP) composite construction and shall be regarded as minimum standards for design and construction as manufactured.

2.0 GENERAL FEATURES OF DESIGN

2.1 SPAN

Bridge span will be 30'-0" (total length) and shall be measured from each end of the bridge structure.

2.2 WIDTH

Bridge width shall be 6'-0" and shall be measured from the inside face of structural elements at deck level.

2.3 BRIDGE SYSTEM TYPE

Bridge must be designed as a FRP Composite Truss Span

2.4 MEMBER COMPONENTS

All members shall be fabricated from pultruded FRP composite profiles and structural shapes as required.

2.5 CAMBER

Bridge can be pre-cambered to eliminate initial dead load deflections.

3.0 ENGINEERING

Structural design of the bridge structure shall be performed by or under the direct supervision of a Licensed Professional Engineer, registered in the Commonwealth of Pennsylvania and done in accordance with recognized engineering practices and principles.

3.1 UNIFORM LIVE LOAD

Bridge shall be designed for 85 psf or snowmobiles, which ever controls.

3.2 WIND LOAD

The bridge shall be designed for a minimum wind load of 75 psf. The wind is calculated on the entire vertical structure of the bridge as if fully enclosed.

3.3 SEISMIC LOAD

Seismic loads shall be determined according to the criteria specified in the standard building codes (IBC 2002, ASCE 7-02, BOCA, SBC or UBC) unless otherwise requested. Response Spectrum Analysis shall be performed in those designs that require complex seismic investigation. All necessary response spectra information will be provided by the client for evaluation.

3.4 STRUCTURAL DESIGN CALCULATIONS

A complete set of structural calculations shall be submitted for review and approval. The calculations shall be sealed by a Professional Engineer registered in the Commonwealth of Pennsylvania.

3.5 SERVICEABILITY CRITERIA

Service loads are used for the design of all structural members when addressing deflection and vibration issues. Criteria used by Bidder in the design of FRP bridges should be as follows:

Deflection:

Live Load (LL) deflection = L/240

Vertical Frequency (fn): = 5.0 Hz

The fundamental frequency of the pedestrian bridge (in the vertical direction) without live load should be greater than 5.0 hertz (Hz) to avoid any issues with the first and second harmonics.

Horizontal Frequency (fn): = 3.0 Hz

The fundamental frequency of the pedestrian bridge (in the horizontal direction) without live load should be greater than 3.0 hertz (Hz) to avoid any issues due to side to side motion involving the first and second harmonics.

3.6 SNOW LOAD

Sustained snow load conditions shall be evaluated for time dependent effects (creep and relaxation) and expected recovery behavior.

4.0 MATERIALS

4.1 FRP COMPOSITES

FRP Bridge shall be fabricated from high-strength E-glass and isophthalic polyester resin unless otherwise specified.

Weathering and ultraviolet light protection shall be provided by addition of a veil to the laminate construction with a minimum of 0.4 pounds/cubic foot. Minimum material strengths and properties are as follows:

Tension	33,000 psi
Compression	33,000 psi
Shear	4,500 psi
Bending	33,000 psi
Young's Modulus	2,800,000 psi

The minimum thickness of FRP Composite shapes shall be as follows unless otherwise specified: Square tube members (closed type shape) shall be 0.25 in. Wide-flange beams, channel sections, and angles (open type shapes) shall be a minimum thickness of 0.25 in. Standard plate shall be a minimum thickness of 0.25 in.

4.2 DECKING

Wood decking in No. 2 or better Southern Yellow Pine treated according to the American Wood Preservers Bureau. The minimum thickness of three inches (3") thick x twelve inches (12") wide planks are provided for pedestrian, snowmobiles, and bicycle type loading conditions unless a thicker section is required.

4.3 HARDWARE

Bolted connections shall be A307 hot-dipped galvanized steel unless otherwise specified. Mounting devices shall be galvanized or stainless steel.

5.0 SUBMITTALS

5.1 SUBMITTAL DRAWINGS

Detailed construction drawings and diagrams shall be submitted to DCNR for review after receipt of order. As required, all drawings shall be signed and sealed by a Pennsylvania licensed Professional Engineer registered in the Commonwealth of Pennsylvania.

5.2 SUBMITTAL CALCULATIONS

As required, structural calculations shall be submitted to the DCNR. All calculations will be signed and sealed by a Pennsylvania licensed Professional Engineer registered in the Commonwealth of Pennsylvania.

6.0 FABRICATION

6.1 TOLERANCES

All cutting and drilling fabrication to be done by experienced fiberglass workers using carbide or diamond-tipped tooling to a tolerance of 1/16". No material deviations beyond industry standards are accepted. All cut edges to be cleaned and sealed.

7.0 RAILINGS

Railings for bridges will be a minimum of fifty-four inches (54") above the floor deck and designed to AASHTO standards for both pedestrian and snowmobile loadings.

7.1 SAFETY RAILS

Continuous horizontal midrails shall be located on the inside of the bridge trusses. Maximum opening between the midrails shall be available as required, but should not be greater than nine inches (9").

7.2 TOEPLATES

Toeplates are three inch (3") channels

8.0 FINISHING

Bridge color shall be as chosen by the Department. No painting is required or permitted as the color is added during the manufacturing process.

9.0 DELIVERY

Delivery is made by truck to the park office at:

Sinnemahoning State Park; 4843 Park Road; Austin, PA 16720

Bidder will notify DCNR in advance of the expected time of arrival at the site. Bridge will be shipped to the site in component parts or partially assembled. The spans can be completely assembled using standard hand tools.

9.1 ERECTION DIRECTION

For bridge shipped in component parts or partially assembled, Bidder shall provide assembly drawings and a recommended assembly procedure for constructing the bridge. Temporary supports or rigging equipment, if needed, will be the responsibility of the Department.

9.2 SITE ISSUES and FOUNDATION DESIGN

DCNR shall procure all necessary information about the site and soil conditions. The design of the bridge abutments shall be included in the design as submitted by the fabricator.

10.0 WARRANTY

Bidder shall warrant the structural integrity of all FRP materials, design, and workmanship for 15 years.

V. ESTIMATED QUANTITIES:

Quantities are estimated and may increase or decrease, depending on the needs of the Department. Contractor shall be paid for actual quantities delivered.

VI. CONTRACTOR REQUIREMENTS:

The contractor shall also comply with the Reciprocal Limitations Act, as Attached. Vendor shall complete and return with the bid package pages 3 and 4 of the Reciprocal Limitations Act Requirements form included with this IFB.

Invoice format will be in accordance with the IFB-Invitation for Bids form and subsequent Purchase Order. Failure to invoice in accordance to the Purchase Order Unit Prices could result in delay of payment.

VII. CONTRACT TERM:

The contract shall commence upon execution and receipt of Purchase Order and terminate November 30, 2014.

VIII. BID AWARD:

Bidder shall complete and return the following for award of bid:

a. Reciprocal **Limitations Act Form**

The Department will only accept out to two (2) decimal points when entering your "Unit Price" figure on the IFB-Invitation for Bid.

Bid will be awarded based on the lowest total sum of the bid.

IX. PAYMENT TERMS:

Payment shall be made upon satisfactory receipt and acceptance of the bridge materials as specified.

X. RECEIPT AND OPENING OF BIDS:

Bids will be submitted via the PA Supplier Portal, to be found at www.pasupplierportal.state.pa.us. Faxed bids and mailed bids will not be accepted.

No responsibility will be attached to any employee of the Department for the premature opening of, or the failure to open, a bid for any reason whatsoever.

XI. INVOICES:

All invoices for this contract **MUST** be sent to the following address:

Commonwealth of Pennsylvania
PO Invoices
P.O. Box 69180
Harrisburg, PA 17106

All invoices MUST have the Purchase Order Number, as well as your SAP Vendor Number, on the invoice. Failure to provide this could result in a delay of your payment.

XII. BID RESULTS:

Bidder can obtain results by accessing <http://www.emarketplace.state.pa.us> under the “Solicitations and Tabulations” section. The bids will be posted the morning following the bid opening. The results are the apparent bidders and all bids are under review until final award of the contract.

The bidder is responsible for monitoring the DGS website to view any change notices or flyers to this IFB. The change notices/flyers shall become incorporated as part of the bid documents.

XIII. VENDOR NUMBER:

In order to be awarded a state contract, interested vendors must be registered with the Commonwealth and must have a registered vendor number. To register and obtain number, access www.pasupplierportal.state.pa.us.