

MISSAUKEE COUNTY ROAD COMMISSION

1199 N. MOREY ROAD – P.O. BOX A

LAKE CITY, MI 49651

PHONE: 231-839-4361 · FAX: 231-839-5381

PROPOSAL

PROJECT: Supply of materials for 24' clear span bridge for Beuthian Road over the Addis Creek

DESCRIPTION: Supplying and delivering materials per engineer's plans and specifications.

Materials shall be delivered by or before August 1, 2024 to the Beuthian Road job site or the Missaukee County Road Commission. (Will be determined by Missaukee County Road Commission schedule.)

The Missaukee County Road Commission will accept Bids until 1:00 P.M. local time Tuesday, March 26, 2024 at: 1199 North Morey Road, Lake City, MI. 49651 (shipping address), P.O. Box A, Lake City, MI 49651 (mailing address) or email to: finance@mcrc-roads.com. Bid packages will be available at the Missaukee County Road Commission or on their website.

ALL BIDS WILL BE SEALED AND PLAINLY MARKED AS "BEUTHIAN ROAD TIMBER BRIDGE".

The bidder understands and agrees that the Missaukee County Road Commission reserves the right to reject any and all bids based on the best interest of the Missaukee County Road Commission.

The bidder has examined the plans, specifications, special provisions, and related materials in the proposal as well as the location of the work described in the proposal for the project, and is fully informed as to the nature of the work and conditions relating to its performance and understands that the quantities shown are approximate only and are subject to either increase or decrease.

The undersigned proposed to furnish any and all materials (per the engineer's plans and specifications) and deliver the materials to the job site or the Missaukee County Road Commission on or before August 1, 2024.

Contractor Name: _____

Contractor Email Address: _____

Signature of Authorized Representative: _____

ITEM	TOTAL
Materials for 24' Clear Span Timber Bridge	

Estimated Delivery Date: _____

TIMBER BRIDGE, FURNISH

a. Description. This work consists of design, fabrication, preservative treatment, delivery and erection of the timber bridge as shown on the plans, and per the standard specifications except as modified herein. The bridge must have the span, width, and skew angle as shown on the plans. Deviation from dimensions shown on the plans must be approved by the Engineer.

The design and fabrication of the timber bridge must be done by one of the following timber bridge suppliers, or approved equal:

1. Wheeler Lumber, LLC
2. Pinnacle Lumber and Plywood
3. Sentinel Structures

The fabricator must be regularly engaged in the design and fabrication of structural timber and lumber elements and must furnish independent records or certification of competency upon request of the Engineer.

b. Design. Certify that the timber bridge was designed according to the current *AASHTO LRFD Bridge Design Specifications* and the 2020 MDOT Standard Specifications for Construction. Include design calculations for the bridge deck with the certification.

Design the structure in accordance with the following criteria:

1. All dead loads, superimposed dead loads, and live load shall be as specified in the *AASHTO LRFD Bridge Design Specifications*.
2. Live load shall be HL-93 Modified. The design vehicle shall be positioned to produce the maximum load effect. The design shall include a check of all Michigan Legal Truck configurations.
- 4 Bridge element deflections shall be in accordance with the *AASHTO LRFD Bridge Design Specifications*.
5. Individual element dimensions shall be determined by the manufacturer.

Design timber railings as part of the deck panel system.

The design, design calculations, and certification must be signed and sealed by a licensed professional engineer registered in the State of Michigan.

c. Shop Drawings and Bridge Plans. Submit shop drawings showing details of all pile caps, deck panels, transverse spreader beams, backing planks, pile-stays, railings, cross bracings, connections and joint elements. Include all element physical dimensions, methods of manufacture, and recommended installation procedures. Submit shop drawings to the Engineer in accordance with subsection 104.02 of the Standard Specifications for Construction. Ensure all documents submitted for review and approval are developed and sealed by a Professional Engineer licensed in the State of Michigan. Do not begin fabrication before receiving written approval of the shop drawings and design calculations.

The drawings shall include all details, dimensions, and quantities necessary to fabricate and erect all components of the bridge, and shall include, but not necessarily be limited to the following items:

1. Title sheet containing project location, specifications and construction notes
2. General Plan of Structure showing plan, elevation and deck cross section views
4. Structural timber and lumber material grades, species designation, and other material grades
5. Lap joint details including number and spacing of drive spikes
6. Abutment plan, elevation and section views
7. Railing section and details

d. Load Rating. As part of the design, perform load ratings on the timber bridge in accordance with the *AASHTO Manual of Bridge Evaluation*, the *FHWA* specifications for the *National Bridge Inventory*, and the *Michigan Bridge Analysis Guide*. The following ratings must be calculated:

1. The Inventory Rating, SNBI item B.LR.05
2. The Federal Operating Rating, SNBI item B.LR.06
3. The Michigan Operating Rating (controlling legal load rating), SNBI item B.LR.07

Perform the load ratings using the as-designed configuration of the bridge, and assuming the HMA wearing surface has been placed. Submit an electronic copy of the Load Rating Assumption Sheets, analysis program or calculation input and output, and a completed Bridge Analysis Summary form to the Engineer for review not less than 10 working days before beginning fabrication, in accordance with subsection 104.02 of the Standard Specifications for Construction. Ensure all documents submitted for review and approval are developed and sealed by a Professional Engineer licensed in the State of Michigan.

Upon construction completion, adjust the load rating analysis as necessary to include the as-built conditions of the bridge, and submit to the Engineer as described above. The engineers performing and checking the load rating analysis must both have an active user profile in the Michigan Bridge Management and Inspection System (MiBRIDGE).

e. Materials. Use timber materials meeting the requirements of sections 709 and 912 of the Standard Specifications for Construction. Steel plates and hardware shall meet the requirements of sections 707 and 906 of the standard specifications. Galvanize structure steel components in accordance with section 716.03.B.4 of the standard specifications.

Provide access to the Owner for quality assurance inspection. Notify the Engineer a minimum of 2 weeks prior to start of fabrication. This inspection is not considered a substitute for the manufacturer's quality control requirements as stated herein.

As far as practicable, perform all planing, cutting, trimming, drilling, boring, chamfering, mortising, surfacing and framing prior to treatment. Coat cut surfaces according to *AWPA M4*

Standards if cutting and drilling must be done after treatment process. Pressure treat all superstructure, railing and substructure components with Copper Naphthenate to a minimum retention of 0.075 pounds per cubic foot (pcf) as copper (Cu) metal.

All galvanized hardware shall be in accordance with MDOT Specifications, except as specifically modified herein. All galvanized fasteners shall be ASTM A307. All metal components which are incorporated into the bridge shall conform to 20SP-105A-04.

Split rings of 2 ½ inch and 4-inch diameters shall be manufactured from hot-rolled carbon steel, conforming to SAE Grade 1010. Each ring shall form a closed true circle, with the principal axis of the cross-section of the ring metal parallel to the geometric axis of the ring. The metal section shall be beveled from the central portion toward the edge of the ring to a thickness less than mid-section. One tongue and slot cut shall be provided in the circumference.

Structural timber and lumber specified in the drawings to receive a split ring connector shall be match grooved in each member to a minimum depth equal to one half of the depth of the split ring, with a maximum over-depth cut not exceeding 1/8 inch.

Unless dome head bolts or approved equal is used, all bolt heads or tightening nuts in contact with structural timber and lumber shall have a washer of sufficient thickness and bearing area, to ensure a minimum deformation of the contacted surface when tightened, to develop not more than the maximum allowable tensile stress of the bolt.

Bolt heads or tightening nuts in contact with metal surfaces shall have a cut washer or approved equal placed between the bolt head or nut and the metal surface.

f. Measurement and Payment. The completed work, as described, will be measured as a lump sum and paid for at the contract price using the following pay items:

Pay Item	Unit
Materials for 24' Clear Span Timber Bridge	Lump Sum