



**ADDENDUM #1**  
**Parks and Open Space**  
**HEIL VALLEY RANCH OPEN SPACE TRAIL BRIDGES AND**  
**BOULDER REVETMENT DESIGN AND CONSTRUCTION PROJECT**  
**RFP# 7394-22**

December 6, 2022

The attached addendum supersedes the original Information and Specifications regarding RFP# 7394-22 where it adds to, deletes from, clarifies or otherwise modifies. All other conditions and any previous addendums shall remain unchanged.

**Please note: Due to COVID-19, BIDS will only be accepted electronically by emailing [purchasing@bouldercounty.org](mailto:purchasing@bouldercounty.org).**

1. Question: We contacted a few FRP Bridge Companies and two of them will not be bidding on this job for the following reasons:  
The specifications are too high with the 2.5 safety ratings, and the 4-foot bridge will not meet the Aashto H5 truck minimum of 7 foot.  
Their bridges might not fit on the Existing abutments. And if too much in the field modification has to take place, then the abutments might not support the bridge.  
The existing abutments have no engineering specifications shared within the plans. Do the existing abutments meet the same bridge specification?  
Some of the engineers seem to think the specification fits a steel or pre-engineered bridge and not an FRP bridge. One said they did a study recently and they could not meet the specification. He said he would gladly come up with the highest standard specification for this project and that then would get more FRP bridge manufactures to quote this project. Please advise.

**ANSWER: The design engineer has consulted with FRP bridge manufacturers, and the engineer has concluded the abutments meet the bridge specifications and an FRP bridge can be constructed on the existing abutments. Additionally, the engineer and bridge manufacturers concluded due to the equestrian use on**

**the bridge the safety rating of 4 is correct and the 4-foot wide bridge can meet AASHTO specifications.**

2. Question: If the intent of the bridge is to be an FRP bridge, why is there a wood decking? The FRP manufacturers are not understanding this, because normally they manufacture the decking using FRP material? Once again it seems that an FRP manufacturer should come up with the specifications of this job, they seem to think these are mixed specifications of a wooden steel and FRP bridge.

**ANSWER: The wood decking is due to loading created by equestrian traffic that will be using the bridge. Some FRP bridge manufacturers indicate wood decking will meet the load requirement for horses whereas the FRP decking may not.**

3. Question: Several manufacturers are stating they cannot warranty the bridge, without new abutments. The issue would be the abutments are not new. Please advise.

**ANSWER: There are FRP bridge manufacturers that will warranty their bridges using the existing abutments.**

4. Question: Will this project require quality assurance in-plant inspection during the fabrication of materials for the bridges?

**ANSWER: No.**

5. Question: To access the east bank, can our heavy equipment cross Plumley Creek between the two proposed bridge LOCs?

**ANSWER: There are a couple of access points north of the trailhead that have been previously used to access the east of Plumely Creek. If those points do not work for the contractor's equipment, then BCPOS will work with the selected contractor to find other points of access.**

6. Question: The plans say the bridge color shall be coordinated with Boulder County Parks and Open Space. Attachment D says the color is to be brown. Do you want the FRP bridge painted brown or are you open to proposals based on manufacture colors?

**ANSWER: Disregard the bridge specifications on the current set of plans and Attachment A. The bridge specifications attached to Addendum #1 at the end of this document will be the only bridge specifications used for this project.**

7. Question: Specs on the plans (sheet 2) & Attachment D differ; can we follow the material properties on the plans?

**ANSWER: Disregard the bridge specifications on the current set of plans and Attachment A. The bridge specifications attached to Addendum #1 at the end of this document will be the only bridge specifications used for this project.**

**1-ATTACHMENT INCLUDED:**

**FRP PREFABRICATED BRIDGE SPECIFICATIONS**

**Submittal Instructions:**

Submittals are due at the email box only, listed below, for time and date recording on or before **2:00 p.m. Mountain Time on December 13, 2022.**

**Please note that email responses to this solicitation are limited to a maximum of 50MB capacity.**

**NO ZIP FILES OR LINKS TO EXTERNAL SITES WILL BE ACCEPTED. THIS INCLUDES GOOGLE DOCS AND SIMILAR SITES. ALL SUBMITTALS MUST BE RECEIVED AS AN ATTACHMENT (E.G. PDF, WORD, EXCEL).**

**Electronic submittals must be received in the email box listed below. Submittals sent to any other box will NOT be forwarded or accepted. This email box is only accessed on the due date of your questions or proposals. Please use the Delivery Receipt option to verify receipt of your email. It is the sole responsibility of the proposer to ensure their documents are received before the deadline specified above. Boulder County does not accept responsibility under any circumstance for delayed or failed email or mailed submittals.**

Email        [purchasing@bouldercounty.org](mailto:purchasing@bouldercounty.org); identified as **RFP# 7394-22** in the subject line.

All proposals must be received and time and date recorded at the purchasing email by the above due date and time. Sole responsibility rests with the Offeror to see that their bid is received on time at the stated location(s). Any bid received after due date and time will be returned to the bidder. No exceptions will be made.

The Board of County Commissioners reserve the right to reject any and all bids, to waive any informalities or irregularities therein, and to accept the bid that, in the opinion of the Board, is in the best interest of the Board and of the County of Boulder, State of Colorado.



**RECEIPT OF LETTER  
ACKNOWLEDGMENT**

December 6, 2022

Dear Vendor:

This is an acknowledgment of receipt of Addendum #1 for RFP# 7394-22, HEIL VALLEY RANCH OPEN SPACE TRAIL BRIDGES AND BOULDER REVETMENT DESIGN AND CONSTRUCTION PROJECT.

In an effort to keep you informed, we would appreciate your acknowledgment of receipt of the preceding addendum. Please sign this acknowledgment and email it back to [purchasing@bouldercounty.org](mailto:purchasing@bouldercounty.org) as soon as possible. If you have any questions, or problems with transmittal, please call us at 303-441-3525.

This is also an acknowledgement that the vendor understands that **due to COVID-19, BIDS will only be accepted electronically by emailing [purchasing@bouldercounty.org](mailto:purchasing@bouldercounty.org).**

Thank you for your cooperation in this matter. This information is time and date sensitive; an immediate response is requested.

Sincerely,

Boulder County Purchasing

Signed by: \_\_\_\_\_ Date: \_\_\_\_\_

Name of Company \_\_\_\_\_

# **FRP PREFABRICATED BRIDGE SPECIFICATIONS**

## **1.0 GENERAL**

### **1.1 Scope**

These specifications are for a fully engineered clear span bridge of fiber-reinforced polymer (FRP) composite construction and shall be regarded as minimum standards for design and construction. The existing provisions of the AASHTO Standard Specifications for Highway Bridges, 17th Edition, shall apply when using these Guide Specifications, in conjunction with the guidelines in the references. [Guide Specifications for Design of FRP Pedestrian Bridges First Edition 2008].

### **1.2 Qualified Suppliers**

The bridge manufacturer shall have been in the business of design and fabrication of bridges for a minimum of 4 years and provide a list of 10 successful bridge projects of similar construction. List the location, bridge size, owner, and contact reference for each bridge.

## **2.0 GENERAL FEATURES OF DESIGN**

### **2.1 Span**

Bridge spans shall be in accordance with the Plans and Specifications.

### **2.2 Width**

Bridge widths shall be in accordance with the Plans and Specifications

### **2.3 Bridge System Type**

Bridges shall be designed as a FRP composite side truss span with outriggers. Bridges shall have sloped ends.

### **2.4 Member Components**

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

### **2.5 Camber**

Bridge shall be mechanically precambered over full length of bridge. In order to achieve a mechanical chamber, hole spacing to the top chord at diagonals must measure slightly longer than that the bottom chords. This in turn makes top chords slightly longer than bottom chords & creates the chambered effect. Chamber shall not be held by friction connection.

### **3.0 ENGINEERING**

Structural design of the bridge structure(s) shall be performed by or under the direct supervision of a licensed professional engineer. The bridge design shall be in accordance with recognized engineering practices and principles.

#### **3.1 Uniform Live Load**

Bridges shall be designed for an 85 PSF pedestrian live load rating.

#### **3.2 Vehicle Load (as required)**

A specified vehicle configuration determined by the operating agency may be used for the design vehicle. If an agency design vehicle is not specified, the loads conforming to the AASHTO Standard H-5 Truck used. The vehicle live load shall not be placed in combination with the pedestrian live load. A vehicle impact allowance is not required.

#### **3.3 Wind Load**

All bridges shall be designed for a minimum wind load of 35 psf. The wind is calculated on the entire vertical surface of the bridge as if fully enclosed.

#### **3.4 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.

#### **3.5 Allowable Stress Design Approach**

An Allowable Stress Design (ASD) approach is used for the design of all structural members. Factors of safety used by Arete Structures. in the design of FRP bridges are as follows unless otherwise specified (based on the Ultimate Strength of the FRP material):

Tension: 4.0

Bending: 4.0

Compression: 4.0

End bearing: 4.0

Shear: 4.0

Connections: 4.0

#### **3.6 Serviceability Criteria**

Service loads are used for the design of all structural members when addressing deflection and vibration issues. Criteria used in the design of FRP bridges are 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 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.

### **3.7 Snow Load**

Snow 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. 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 bridges 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. Minimum material strengths and properties are as follows:

Tension: 30 ksi

Compression: 30 ksi

Shear: 4 ksi

Bending: 30 ksi

Modulus: 2,800,000 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: Wood decking shall be Standard 3x12, No. 2 southern yellow pine & treated according to the American Wood Preservers Bureau. Standard 3x12 planks are recommended for equestrian and light vehicle type loading conditions. Running Planks (Wearing Surface): Running planks shall be standard 5/4 in. x 6 in. (nominal) planks. The planks shall have a minimum length of 8 feet. Planks shall be installed 90 degrees perpendicular to and over the top of the 3 in. x 12 in. deck planks and shall be the full width of the bridge. Wood shall be No. 2 Southern Yellow Pine, treated in accordance with the Western Wood Preservers Institute's Best Management Practices for the Use of Treated Wood in Aquatic Environments. The treatment shall be a waterborne preservative in accordance with American Wood Protection Association (AWPA) Standard U1, Category UC4A.

## **4.3 Hardware**

Bolted connections shall be A307 hot-dipped galvanized steel unless otherwise specified. Mounting devices shall be galvanized or stainless steel. Hardware in contact with treated lumber shall be compatible for that use. Hardware shall not be susceptible to corrosion from the chemicals used in wood treatment process.

## **5.0 SUBMITTALS**

### **5.1 Submittal Drawings**

Schematic drawings and diagrams shall be submitted to the client for their review after receipt of order. As required, all drawings shall be signed and sealed by a licensed professional engineer.

### **5.2 Submittal Calculations**

As required, structural calculations shall be submitted to the client. All calculations will be signed and sealed by a licensed professional engineer.

## **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**

### **7.1 Rail Height**

Railing height shall be 42" above the floor deck.

## **7.2 Railing**

Horizontal safety mid-rails shall be located on the inside of the trusses. Maximum opening between the mid-rails shall not be greater than 4" spacing.

## **7.3 Toe Kick**

3" Channel "Toe Kick" are standard and must be installed no more than 1" above the decking.

## **8.0 FINISHING**

Bridge color shall be Slate Gray and produced with fire retardant additives during the manufacturing process. Painting will not be allowed.

## **9.0 WARRANTY**

The manufacturer shall warrant the structural integrity of all FRP materials, design and workmanship for 15 years. This warranty shall not cover defects in the bridge caused by foundation failures, abuse, misuse, overloading, accident, faulty construction or alteration, or other cause not the result of defective materials or workmanship. This warranty shall be limited to the repair or replacement of structural defects and shall not include liability for consequential or incidental damages.