

**Project Specifications For Prefabricated Steel Truss Bridge  
SIC - 2850**

**General:**

These specifications are for a fully engineered clear span bridge of welded steel construction and shall be regarded as minimum standards for design and construction as manufactured by **Echo Bridge South**, 187 Dutton Road, Section, Alabama 35771.  
Contact: **Keith Wells at 1-607-426-3338**

Manufacturers other than Echo Bridge South may be used provided they are pre-approved by the Project Engineer ten (10) days prior to bid and they meet or exceed all the following specifications.

The bridge manufacturer shall have been in the business of design and fabrication of bridges for a minimum of five (5) years on of which has been in service for at least three (3) years.

The engineer's decision shall be final. All suppliers will be rejected if the engineer decides that the contractor does not meet qualifying criteria.

The bridge Supplier shall be certified by the American Institute of Steel Construction (AISC) to produce fabricated structural steel in the AISC Certification Program.

**Bridge Dimensions:**

**Span:**

Center to Center of bearing of the bridge shall be \_\_\_ feet, \_\_\_ inches

**Width:**

Inside clear width of bridge shall be \_\_\_ feet, \_\_\_ inches.

**Bridge Styles:(Choose One)**

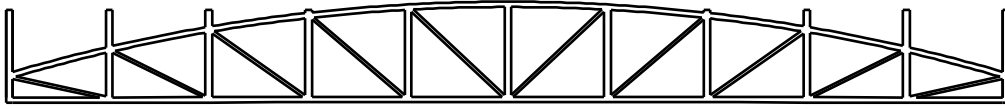
**Liberty Series:**



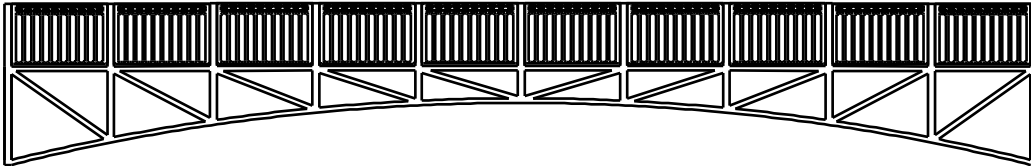
**Liberty-X Series:**



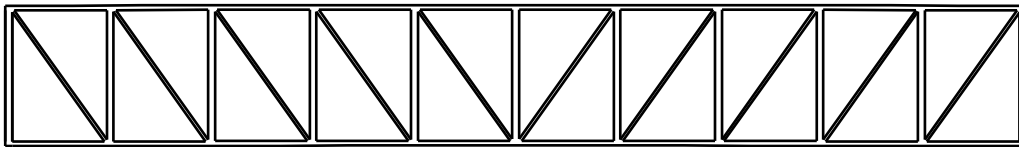
**Crescent Series:**



**Monarch Series:**



**Harmony Series:**



**Safety Rails: (Choose One)**

The top of the top chord shall be no less than [42 inches](#) above the deck (measured from the high point of the deck) on bridges used for pedestrian traffic.

Or

The top of the top chord shall be no less than [54 inches](#) above the deck (measured from the high point of the deck) on bridges used for bicycle traffic per AASHTO guide specifications.

**Rail Type: (Choose One)**

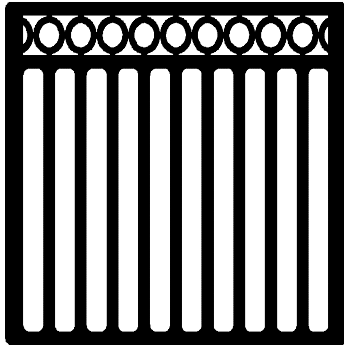
Horizontal safety rails shall be placed on the structure up to a minimum height of [\\_\\_\\_ feet, \\_\\_\\_ inches](#) above deck surface. Rails shall be placed so that they would prevent a 4" sphere from passing through the truss. The rails may be placed on the inside or outside of the truss.

Or

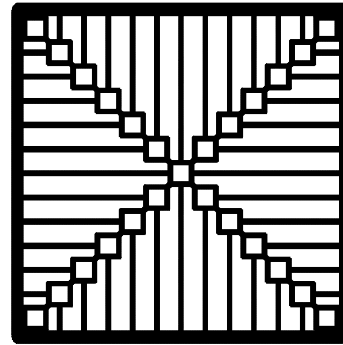
Vertical Pickets safety rails shall be placed on the structure up to a minimum height of \_\_\_feet, \_\_\_inches above deck surface. Rails shall be placed so that they would prevent a 4” sphere from passing through the truss. The rails may be placed on the inside or outside of the truss. Vertical Pickets shall be the standard ½” Pickets welded to less than a 4” opening.

Or

One of our Standardized Decorative Panel Patterns that will add a more ascetic appeal to your bridge and project. Our panels are designed with ¼” and 3/8” plate.



Model CP-1(Circle Picket)



Model SC-1 (Square-Cross)

### **Camber:**

The bridge shall have a vertical camber to offset dead load and appear flat.

### **Design:**

#### **Uniform Live Load:**

Pedestrian bridges shall be designed for an evenly distributed live load of 85 pounds per square foot (psf) of deck. When the deck area exceeds 400 square feet (sq. ft.), the load may be reduced in accordance with the following formula:

$$W = 85(0.25 + 15/(a^{.5}))$$

W = Pedestrian Load (psf)

A = Deck influence area (sq. ft.)

The reduced design load shall be no less than 65 psf.

#### **Vehicle Load:**

Pedestrian bridges with the occasional slow moving maintenance or emergency vehicles, impact is not required.

Vehicular bridges will also be designed to withstand a moving concentrated load of a vehicle weighing 1000 pounds per foot of bridge width (up to 10,000 pounds).

For bridges used where snow removal is a concern, the vehicle load shall be in addition to a 20-pounds-per-square-foot, evenly distributed, live load. The vehicle load shall be distributed such that 80% of the load is on the rear axle per (AASHTO).

**Wind Load:**

All bridges shall be designed with a minimum wind load of 30 pounds per square foot on the full vertical projected area of the bridge.

**Deflection:**

The vertical deflection of the truss due to pedestrian live load shall not exceed  $L/500$ . The maximum deflection due to vehicular loads shall not exceed  $L/800$ . For pedestrian comfort, the minimum live load used for the deflection check shall be a minimum of 600 pounds per lineal foot of bridge. The horizontal deflection due to lateral wind load shall not exceed  $L/500$  of the span length.

**Seismic:**

All bridges shall be designed for seismic loads of the intensity required by local codes.

**Design Criteria:**

The design of the bridge shall be in accordance with the "American Institute of Steel Construction"; "Allowable Stress Design", June 1, 1989 or latest edition. Tubular members and their connections shall be designed per the AISC "Hollow Structural Sections Connections Manual" latest edition.

**Materials:**

All structural members shall be made of weathering steel and have a minimum thickness of material of at least  $3/16$  of an inch.

Steel material shall be corrosion resistant high-strength low alloy material meeting ASTM A242, A588, A606 or A847 with a minimum corrosion index of 5.8 per ASTM G101. All members of the truss and deck system shall be fabricated from square/rectangular hollow structural sections, wide flange may be used for floor beams. Open ends of posts and floor beams shall be capped.

**Decking Options: (Choose One Option from Below)**

**Southern Yellow Pine Decking**

The wood decking shall be No. 1 grade Southern Yellow Pine. Wood decking shall be treated to a minimum of .40 pounds of preservative per cubic foot of wood. The wood deck shall be designed for a minimum 100 psf local loading condition in addition to the wheel loadings produced by the vehicle in section 3.3. Floor planks shall be attached

with at least two plated fasteners where planks cross supporting members. Wood thickness and width will be determined per design requirements.

Or

### **Hardwood Decking**

All decking shall be full thickness planks unless approved otherwise.

Wood decking shall be naturally durable Harwood Ipe (Tabebuia Spp Lapacho Group).

All Planks shall be partially air dried to a moisture content of 15% to 20%, and shall be supplied S4S (surfaced four sides); E4E (eased four edges eased to a radius of 1/8”.

Measured at 30% moisture content, the width and thickness shall not vary from specified dimensions by more than  $\pm 0.04$  inches. All planks shall be supplied with the end sealed with “Anchor seal” Mobil CER-M or an equal aqueous wax log sealer. Wood thickness and width will be determined per design requirements.

Or

### **Concrete Floor**

Stay-in-place galvanized metal form deck shall be used and shall be a minimum of 22 gage. Metal form deck shall not be considered as acting as composite reinforcing. Metal form deck shall be secured to the support members with fasteners or weld in accordance with the Manufacturers recommendation. Metal form deck panels shall be of a length to span a minimum of two bays of the truss supports. Metal form deck shall be designed for a construction live load of either 20 psf or a 200 lb moving point load. Dead load deflection due to normal weight wet concrete shall be limited to L/180 or 3/4”.

Field splices shall be bolted with High Strength ASTM A325 bolts; type 3 bolts are required for weathering steel bridges.

Welding materials shall be in strict accordance with the American Welding Society (AWS) Structural welding code, D1.1. Filler metal will match characteristics of the base material. Welders will be certified in accordance with AWS D1.1. (Bridge Welding Code)

\*All welds are to be 100% visually inspected.

### **Railings & Accessories:**

All railings shall have a smooth inside surface with no protrusions or depressions. All ends of angles and tubes shall be closed and ground smooth. In accordance with AASHTO, railings for bicycle use should be a minimum height of 54 inches above the floor deck.

### **Safety Rails:**

Continuous rails shall be located on the inside of the trusses.

### **Traffic Rails:**

Bridges designated as vehicular bridges shall be equipped with traffic rails conforming to

AASHTO Test Level 1 (TL-1).

\*Rub Rails, handrails and toe rails shall be designed per AASHTO as horizontal.

**Delivery and Erection:**

Delivery is made to a location nearest the site, which is easily accessible to normal, over the road tractor/ trailer equipment. All trucks delivering bridge materials will need to be unloaded at the time of arrival. Erection of the bridge structure to be done by manufacturer or AISC Certified Erector. The manufacturer will provide detailed, written instruction n the proper lifting procedures and splicing procedure (if required). The method and sequence of erection shall be the responsibility of the Manufacturer of the supplied bridge or a AISC Certified Erector.

The bridge manufacturer shall provide written inspection and maintenance procedures to be followed by the bridge owner.

**Warranty:**

The bridge manufacturer shall warrant their steel truss structure(s) to be free of design, material and workmanship defects for a period of ten years from date of delivery.

**Certification of Warranty:**

Echo Bridge shall warrant their steel structure(s) to be free of design, material and workmanship defects for a period of ten years from date of delivery.

This warranty does not cover defects in the bridge caused by abuse, misuse, overloading, accident, improper maintenance, alteration or any other cause not the result of defective materials or workmanship.

This warranty shall be void unless owner's records can be supplied which indicate compliance with minimum guidelines specified in the inspection and maintenance procedures.

Repair or replacement shall be the exclusive remedy for defects under this warranty. The bridge manufacturer shall not be liable for and consequential or incidental damages for breach of any express or implied warranty on the structures.

Echo Bridge meets the above requirements for warranty.