TrueNorth Steel

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PEDESTRIAN/TRAIL BRIDGE GENERAL SPECIFICATIONS

A. GENERAL REQUIREMENTS –

Scope, Standards and Quality System - The Bridge Design-build supplier shall under the provisions herein, design, fabricate, and deliver to the job site, ready for installation, one shop assembled, pre-fabricated steel bridge superstructure complete with deck system. The Bridge design will conform to design standards associated with the American Association of State Highway Transportation Officials (AASHTO) (www.transportation.org) and the Bridge fabricator shall have a quality system that is certified by the American Institute of Steel Construction (AISC) (www.aisc.org) in Major Bridge fabrication. The bridge structure supplied shall be a True North Steel Pre-engineered bridge or approved equal. One day of installation guidance by the manufactures representative is required to insure proper installation of bridge structure and pre-engineered Super Sill abutment system.

Pony Truss Design - The Bridge shall incorporate a basic pony truss design that provides full, unimpeded travel within the truss members with no overhead structure tying the outside truss members together. The pony truss design allows the design flexibility of having the floor (deck) elevation to be varied according to individual project requirements, from 1) flush with the bottom truss chord to 2) within 42" of the top chord (pedestrian applications). The bridge will be designed and configured to provide a bolted interface between the Bridge, back-walls, and support abutments, and be furnished complete with bearing pads that provide for expansion and contraction of the Bridge throughout the design temperature range.

Modular Design - For trail bridges in excess of 70-feet in length, the superstructure will deliver in at least two (2) full-width modules with bolt-up splice connections that do not require field-welding on the bridge. Minimal field-welding may be required for the anchoring system. Each splice plate should be clearly tagged with its location and/or orientation on the Bridge. The Bridge should be supplied with a laminated installation guide that provides clear instructions on the installation sequence and splicing procedure.

Demonstrated Experience - Only approved suppliers with a minimum of five (5) years of demonstrated performance of designing and building similar trussed bridges to this specification are approved to bid, such as TrueNorth Steel (www.truenorthsteel.com).

Contractor Installation - Site preparation, off-loading, hoisting, setting, field assembly of bridge sections and other items necessary to accommodate the complete setting of the Bridge will be supplied under separate contract. This specification covers the general design, material, and fabrication requirements of the Bridge.

Abutments & Back Walls - It is recommended that abutments and back walls for total project optimization, should be approved, designed, or supplied by the Bridge Design-builder. Pre-engineered abutment system shall be pre-fabricated steel perched **Super Sills™** manufactured by True North Steel or approved equal. Pre-engineered abutments shall be ready to fill with concrete (F'c =4000PSI) once installed and require no additional reinforcing steel to perform properly. A steel back wall shall be included and be an integral with the sill. Steel back wall shall

extend four feet on each side of bridge. Once the sill is fabricated coat with Corothane urethane coating.

B. REFERENCE SPECIFICATIONS AND STANDARDS -

The material and workmanship shall be of the highest grade throughout and in accordance with the best standard practices of modern bridge construction. All materials used in fabrication of the superstructure shall conform to the applicable specifications. The Fabricator shall be AISC Certified in Major Bridge.

Copies of any referenced specification; standards or codes may be procured from the following organizations;

AASHTO	Current AASHTO Standard Specifications for Highway Bridges Guide, Specification for Design of Pedestrian Bridges, 1997
ASTM	American Society for Testing and Materials 1916 Race Street Philadelphia, PA 19103
AWS	American Welding Society 550 North Le June Road Miami, FL 33126

C. TECHNICAL SPCIFICATIONS

Design: Bridge shall be designed by a licensed professional engineer (PE).

Load Rating/Live Load: Main supporting members, including girders, trusses and arches shall be designed for a pedestrian live load of 85 pounds per square foot of bridge walkway area. The pedestrian live load shall be applied to those areas of the walkway so as to produce maximum stress in the member being designed. Reduction in live load is applied as allowed by AASHTO Guide Specifications for the design of pedestrian bridges. Additional criteria applied to the design of the project include:

- □ **Pedestrian Loading** – 85 pounds per square foot
- □ **H-5** (10,000 # light vehicle loading)
- □ **H-10** (20,000 # vehicle loading)
- □ **H-20** (40,000 # vehicle loading)
- □ **HS-20** (36 ton, three axle heavy-duty vehicle loading)
- □ **Special Load Rating** _____

Length: **xx-feet, yy-inches** out-to-out (dimension measured from each end of the Bridge structure). *Note: If the bridge is a replacement for an existing structure, measurements should be supplied on total length (out-to-out) as well as length to anchor bolts and support point on the abutments*.

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Width/Tread: Inside clear tread width of **xx-feet, yy-inches** between rails (dimension is measured between the top chords of the truss, including any dimension taken up by supplemental handrail, bump curbing, or safety rail)

Railing: Safety rails between the top truss chord and deck shall provide fall protection. The safety railing and/or top chord height above the deck shall be a minimum of:

□ **42" for pedestrian traffic.**
□ **54" for combination bicycle and pedestrian traffic.**

Safety rails shall conform to AASHTO design for pedestrian bridges.

Temperature: Design shall accommodate a temperature differential of 120° F.

Deck: Deck shall be:

□ **#2 Douglas fir, treated wood placed perpendicular to the direction of travel. Wood decking is to be installed at the Bridge builder's plant facility and delivered to the job-site complete.**
□ **Galvanized pan decking (B36 Composite Deck 20 Gauge minimum) configured for on-site concrete pour for finished concrete walking surface. ¾" X 3 ¼" welded shear connectors installed on 24" centers, minimum, at the Bridge builders plant facility. *Note: Decking and shear connector specifications may vary for bridges with vehicle loadings.***
□ **Other** _____

Deck shall be level, both end-to-end (note camber specifications below) and side-to-side. End to end camber is permitted but slope of deck shall not exceed 5 percent.

□ **No Camber**
□ **2% camber (standard)**
□ **Special Camber** _____

Materials: All plates and structural steel shapes shall be of domestic (USA) Manufacture and shall conform to the requirements of ASTM Specification A709 Grade 50W (A588 Weathering Steel). Tubular sections will also be of domestic (USA) manufacture and shall conform to ASTM A606 or A847. Exterior surfaces of girders shall be blast cleaned prior to shipment to assure uniform weathering. All bolts, washers and nuts will be ASTM A325 Type 3.

D. WORKING DRAWINGS & COMPUTATIONS

• Complete design drawing prepared, signed and sealed by a registered Professional Engineer.
• Additional Professional Services:

□ **Design Book** – Design calculations, complete and in a form suitable for engineering review and approval, signed and sealed by a registered Professional Engineer.
□ **Abutments and Backwalls** - Complete design of precast abutments and backwalls signed and sealed by a registered Professional Engineer.

E. FABRICATION

Structural steel is to be fabricated in accordance with the AISC Quality Certification Program. The Design Engineer shall affix his or her stamp to the shop drawings certifying all requirements have been met. Welders shall be certified in accordance with AWS D1.1 Flux Core Arc or Shielded Manual Arc Welding.

F. DELIVERY

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The Bridge shall be furnished and delivered to **(local location & state)** no later than **(specify date).**