SECTION 323413 – FABRICATED PEDESTRIAN BRIDGES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.01 SECTION INCLUDES

A. Final design, fabrication, delivery, installation, and quality testing for an engineered pedestrian bridge.

1.02 REFERENCES

A. American Institute of Steel Construction (AISC).

B. ASTM International (ASTM): Standards as referenced in this Section

C. American Welding Society (AWS): D1.1/D1.1M, Structural Welding Code – Steel.

D. The Society for Protective Coatings (SSPC): SP6, Commercial Blast Cleaning.

E. The 2019 Ohio Department of Transportation (ODOT) Bridge Design Manual.

F. The American Association of State Highway and Transportation Officials (AASHTO).

G. The AASHTO Pedestrian Bridge Manual (current edition).

H. ODOT 2019 Construction and Material Specifications, CMS.

1.03 SUBMITTALS

A. Submit complete shop drawings prepared and sealed by a qualified structural engineer who is licensed to practice in the jurisdiction of the Project.

B. Manufacturer's certification of compliance with referenced standards.

C. Manufacturer's qualification statement. Refer to Quality Assurance article below.

D. Field quality control reports specified in Part 3 Execution below.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications:

1. Experience: Proposed bridge manufacturers shall have at least five (5) years' experience in designing, manufacturing, erecting and supplying bridges of the type and extent required for this Project, and a minimum of five (5) successful bridge projects of similar construction, each of which has been in service at least three years.

   a. Documentation shall include location, bridge size, owner, and a contact for reference for each project.

2. Certification: Proposed bridge manufacturer shall be currently certified by the American Institute of Steel Construction to have the personnel, organization, experience, capability, and commitment to produce fabricated structural steel for the category "Advanced Steel Bridges (ABR)" as set forth in the AISC Certification Program. Quality control shall be in accordance with procedures outlined for AISC certification.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Coordinate delivery requirements with manufacturer.

B. Comply with manufacturer's requirements for unloading, lifting, and placement.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. ~~Basis of Design Materials, equipment, and accessories specified in this section shall be products of~~ **The manufacturer shall be prequalified though ODOT Office of Materials Management as Level 6 Fabricators.**
~~1. Continental Bridges; 800-328-2047.~~
~~2. Bridge Brothers; 866-258-3401.~~
~~3. True North Steel; 406-370-2578.~~
~~4. Wheeler: 952-929-7854.~~

2.02 DESIGN REQUIREMENTS

A. General: Structural design of the bridge and end support towers shall be performed by or under the direct supervision of a Professional Engineer licensed in the State of Ohio.

B. All allowable design stresses shall be in compliance with the design, fabrication, and erection of structural steel for buildings by the American Institute of Steel Construction (AISC) and American Association of State Highway and Transportation (AASHTO).
C. Minimum height as shown on the Drawings.
D. Minimum Design Loads shall be as follows:
   1. Uniform live load 90 psf (No live load reduction allowed).

2. Concentrated live load: 1,000 pounds over one square foot.
3. Minimum wind load with enclosure: Per AASHTO.
4. Snow Load with enclosure: 22 psf.
5. Railing load: None.
6. Stay in Place (SIP) Forms: 15 psf.
7. Bridge Cladding (Enclosure) Load: 220 plf (Assumed). (Actual load shall be calculated from cladding (Enclosure) manufacturers design plans).
8. Utilities Dead Load: Calculated from plans.
9. Concrete Deck Dead Load: Calculated from plans.

E. Dimensions and Requirements:
1. Length: As shown on Drawings.
2. Width: Clear unobstructed inside width as shown on DRAWINGS.

F. Railings: None.

G. Camber: 2% (For clearance and drainage).

H. Stay in Place (SIP) forms shall be designed and attached per manufacturer's recommendations.

I. Deflection: The vertical deflection of the bridge due to pedestrian live load shall not exceed 1/400 of the span length. For pedestrian comfort, the load used for the deflection check be a minimum of 500 pounds per lineal foot of the bridge or the uniform load used in Section 2.02.D, whichever is greater. The horizontal deflection due to lateral wind load shall not exceed 1/500 of the span length.

2.03 Materials:

A. Bridge shall be fabricated from ASTM A709 Grade 50 per fabricators. Minimum yield strength 36 ksi per ODOT CMS 513 and tubular sections per ASTM A500, Grade B.

B. Anchor Bolts: ASTM F1554, Grade 55, galvanized.

C. Splice bolts: ASTM A325 per ODOT CMS 513.

D. Concrete Decking: 4.5 ksi per ODOT CMS 511.

E. Bearing Pads: Pre-formed, fabric-reinforced, Type PF elastomeric per AASHTO LRFD 2008, 18,000 psi compressive strength.

F. End Support Towers: ASTM A709 Grade 50, yield strength 50 ksi.

G. All structural members shall have a minimum thickness of material of at least 3/16 inch.

2.04 FABRICATION

A. Material thickness and design of members shall be fully engineered for the length and style of each bridge requirement specified.

B. Workmanship, fabrication, and shop connections shall be in accordance with AWS and AISC specifications.

C. All welding shall be done by welders certified for AWS D1.1/D1.1M structural welding requirements.

D. Welding electrodes: E70 or E80 Series.

E. All exposed members shall have mill scale removed according to SSPC SP6.

F. Painting per ODOT CMS 514.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install bridge and decking according to the Engineer's final approved design package.

3.02 FIELD QUALITY CONTROL

A. Continuous and periodic inspections of the Work as required by Authorities Having Jurisdiction shall be performed by a qualified testing agency acceptable to the Owner. Provide certified reports documenting all inspection procedures.

END OF SECTION 323413