



ADDENDUM 1

PROJECT NAME: Huebner Creek to Medical Center Trail and Park Phase 1 (Floyd Curl to Eckert)

DATE: 7/9/2025

PROJECT NO: 23-04004

This addendum is separated into sections for convenience; however, all respondents, bidders, contractors, subcontractors, material men, and other parties must be responsible for reading the entire addendum. The failure to list an item or items in all affected sections of this addendum does not relieve any party affected from performing as per instructions, providing that the information is set forth one time any place in this addendum. These documents will be attached to and will become part of the Contract Documents for this project. The respondent/bidder is required to acknowledge the receipt of this addendum.

GENERAL:

1. The following changes and/or additions to the Contract Documents, via this addendum, must apply to proposals made for and to the execution of the various parts of the work affected thereby.
2. Careful note of the Addendum must be taken by all interested parties and all trades affected must be fully advised in their performance of the work involved.
3. This Addendum is hereby made part of the project requirements and contract documents for the above reference project. Ensure to acknowledge this Addendum in CivCast when downloading this Addendum. Acknowledgement of this Addendum is a requirement in order to submit bid in CivCast. This addendum consists of the items and their associated attachments as listed below:

A. ADMINISTRATIVE CHANGES TO BID DOCUMENTS:

1. N/A

B. CHANGES TO PLANS / SPECIFICATIONS:

1. SPECIAL PROVISIONS FOR PREFABRICATED PEDESTRIAN BRIDGES TRUSS CONTINENTAL BRIDGE SPECIFICATION.
 - A. ADDED BAILEY BRIDGES, INC. DBA PIONEER BRIDGES AS PRE-APPROVED BRIDGE MANUFACTURER. SEE ATTACHED.
2. ITEM 526 FIELD OFFICE SPECIFICATION UPDATED FOR PARKS AND RECREATION –GREENWAY TRAILS 2025.
 - A. RERENCE FOR ITEM 526 ON HUEBNER CREEK GREENWAY AND MEDICAL CENTER AREA PARK PROJECT MANUALS.

C. QUESTIONS & RESPONSES:

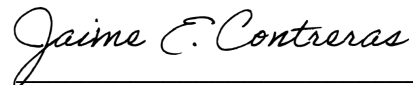
1. QUESTION: THE PREFABRICATED BRIDGE FOR THIS PROJECT IS BASED ON A

CONTECH BRIDGE DESIGN; HOWEVER, PRE-APPROVED EQUIVALENTS MAY BE CONSIDERED, SUBJECT TO REVIEW OF SPECIFIC INFORMATION TO BE SUBMITTED TO "THE ENGINEER." SINCE MULTIPLE ENGINEERS ARE INVOLVED IN THIS PROJECT, COULD YOU PLEASE PROVIDE THE NAME AND CONTACT INFORMATION OF THE INDIVIDUAL(S) TO WHOM THIS INFORMATION SHOULD BE SUBMITTED?

ANSWER: SEE ATTACHED, UPDATED SPECIFICATIONS WITH ADDENDUM NO. 1. POINT OF CONTACT IS DESIREE ALDERETE AND CAN BE REACHED AT DESIREE.ALDERETE@SANANTONIO.GOV

D. Misc:

1. A SUBSTITUTION REQUEST WAS SUBMITTED BY BSC FABRICATON ON JULY 1, 2025. IT IS THE CONSULTANTS DETERMINATION, THE SUBSTITUTION REQUEST WAS DENIED ON MONDAY, JULY 7, 2025.



Jaime E. Contreras
Procurement Manager
Finance Department - Procurement Division

END OF ADDENDUM NO. 1

SPECIAL PROVISIONS FOR PREFABRICATED HALF THROUGH TRUSS CONTINENTAL® PEDESTRIAN BRIDGE

Spans 01, 02, 04 – Approach Ramps to Overpass

1.0 GENERAL

1.1 Scope

These specifications are for fully engineered half through truss (no overhead bracing) bridge of steel construction and shall be regarded as minimum standards for design and fabrication. The work included under this item shall consist of design, fabricating, finishing and transporting the steel truss bridge superstructure including bearings. These specifications are based on products designed and manufactured by Contech Engineered Solutions LLC.

1.2 Definitions

- *Owner*: Entity who ultimately will own the bridge.
- *Engineer*: Engineering Entity or Firm who will be representing the Owner.
- *Contractor*: Entity who will be installing, and/or purchasing, the bridge.
- *Foundation Engineer*: Engineering Entity or Firm who will be designing and detailing the foundation system.
- *Geotechnical Engineer*: Engineering Entity or Firm who will be responsible for providing the Geotechnical information necessary to design the foundation system.
- *Bridge Manufacturer*: Firm who will be designing and supplying the bridge in accordance with these Special Provisions.

1.3 Qualified Bridge Manufacturer

Each Contractor is required to identify their intended supplier as part of the bid submittal. Qualified Bridge Manufacturers must have at least 5 years of experience fabricating these types of structures and shall have an up to date quality certification by AISC per Section 14.1 of these specifications. All suppliers shall fabricate their product utilizing a modern fabrication facility owned and operated by the Bridge Manufacturer that includes the use of CNC beam drilling machines, no brokers are allowed.

Bridge Manufacturer (or approved equal):

Contech Engineered Solutions LLC
1-800-338-1122

E-mail: info@conteches.com

Bridge Consultant: jonathan.mohler@conteches.com; 210-383-5360

ADDENDUM 01

Bailey Bridges, Inc.
dba Pioneer Bridges
1-866-708-5778
E-mail: www.pioneerbridges.com

Bridge Manufacturers, other than those listed above, may be used provided the Engineer receives a written request at least 14 days prior to the bid. The written request shall accompany the following information:

- Bridge Manufacturer's Product Literature,
- Name and resume of Bridge Manufacturer's design professional who will be signing and sealing the engineering submittals,
- Copy of current AISC certification,
- Representative copies of detailed drawings, field procedures, calculations, quality control manual, welder's certifications, proof of two (2) on staff C.W.I., proof of two (2) in-house Texas Professional Engineers,
- At least 10 similar overpass projects completed in the last 15 years; to include project name, owner, location, size, year of fabrication, contact person,
- At least 5 TxDOT truss projects (on system or off system) completed in the past 10 years; to include project name, owner, location, size, year of fabrication, contact person,
- Certification by the Bridge Manufacturer's Design Professional that the bridge proposed will be in accordance with all project development done up to the date of these specifications.

The above will be evaluated by the Engineer for accuracy and ability to provide the bridge in accordance with these specifications. Bridge Manufacturers other than those listed above may only be used if the Engineer provides written approval via addendum 10 days prior to the bid. The Engineer's ruling shall be final.

A representative employed by the Manufacturer is to be in attendance at the project pre-bid and pre-construction meeting, as well as during erection.

1.4 Bridge Manufacturer's Design Professional and Submittals

The Bridge Manufacturer shall have as a direct employee, an engineer who is experienced in bridge design to be in responsible charge of all engineering related task and design. The engineer shall have a minimum of 10 years of experience in bridge design and be a currently licensed civil or structural Professional Engineer in the State of Texas and shall be the engineer who will seal and sign the plans.

Engineering drawings, 11x17 format, shall be prepared and submitted to the Contractor or Owner for their review after receipt of the order. Submittal drawings shall be unique drawings, prepared to illustrate the specific portion of the bridge being fabricated. All relative design information such as member size, ASTM/AASHTO material specification, dimensions necessary to fabricate and required welding shall be clearly shown on the drawings. Drawings shall have referenced details and sheet numbers. All drawings shall be stamped, signed and dated by the Bridge Manufacturer's Design Professional.

Structural calculations for the design of the bridge superstructure shall be prepared by the Bridge Manufacturer and submitted for review after receipt of the order. Calculations shall include complete design, analysis and code checks for the controlling members, connectivity and support conditions, truss stability checks, deck design, deflection checks, bearings and all splices.

2.0 APPLICABLE CODES AND STANDARDS

2.1 Governing Specifications

Bridge shall be designed in compliance with the AASHTO LRFD Guide Specifications for the Design of Pedestrian Bridges, 2009 (*AASHTO Ped*). Calculations shall be in accordance with this document, and formulas shall reference the appropriate sections.

2.2 Other Reference Codes, Specifications and Standards

- AASHTO LRFD Bridge Design Specifications, 9th Edition, 2020 (*AASHTO LRFD*)
- AASHTO LRFD Specifications for Structural Supports for Highway Signs, Luminares, and Traffic Signals, First Edition, 2005 (*AASHTO Signs*)
- AISC Steel Construction Manual, 15th Edition, 2017 (*AISC*)
- ANSI/AISC 360-16 Specification for Structural Steel Buildings, 2016 (*AISC 360*)
- American Welding Society, Structural Welding Code, D1.1, 2015 (*AWS D1.1*)
- ASCE/SEI 7-10 Minimum Design Loads for Buildings and Other Structures, 2010 (*ASCE 7*)
- Setra Technical Guide for Footbridges, 2006 (Setra)
- ANSI/AWC NDC-2015 National Design Specification for Wood Construction, 2015 (*NDS*)
- Tropical Timbers of the World, US Forest Products Laboratory

The AASHTO LRFD Guide Specifications for the Design of Pedestrian Bridges shall control if any conflicting requirements occur with the Other Reference Documents and/or other local Codes.

3.0 BRIDGE SYSTEM TYPE

3.1 Bridge Model and Truss Elevation

The truss style shall be a Connector[®]. The vertical trusses shall be designed such that the top and bottom chord members are parallel for the entire length of bridge. The interior verticals of the trusses shall be perpendicular to the top face of the bottom chord and the end verticals of the trusses shall be plumb. Trusses shall be laid out such that diagonals shall be at an angle of 30-degrees or more with respect to the bottom chord.

3.2 Diagonal Style

The vertical truss shall use a single-diagonal, Pratt configuration, where all the diagonals are in tension for gravity loads.

3.3 Floor Beam Location

The bridge shall utilize an H-Section configuration where the ends of the floor beams are welded only to the interior face of the verticals. The distance from the top of deck to the bottom of the bottom chord shall be determined by the Bridge Manufacturer during final design.

4.0 BRIDGE GEOMETRY

4.1 Span Length

The bridge span lengths shall be either 130'-0" or 120'-0" (horizontal straight line dimension) and measured from end to end of the bridge truss, not including the end dam, any deck extension or bearing that extends beyond the end of the truss. Bridge span length is determined by location of the bridge in the plan set.

4.2 Width

The bridge width shall be 14'-0" and shall be as measured from the inside face of structural truss elements at the deck level.

4.3 Inside Clear Height Above Deck

The top of the top chord shall not be less than 48" above the deck (measured from the high point of the deck). Note that this dimension may be exceeded due to truss height requirements for structural, deflection and vibration requirements.

4.4 Lower Steel Clearance

The Bridge Manufacturer shall determine the distance from the top of the deck (measured from the highest point of the deck) to the bottom of any steel member.

4.5 Truss Bay Spacing

The number of bays and the dimension of the panel points shall be determined by the Bridge Manufacturer.

4.6 Camber

A single simple-span bridge shall have a vertical camber dimension at the mid span equal to 100% of the anticipated full dead load deflection rounded up to the next 1/4". Combined with the elevation difference below, the deck slopes at any point on the bridge do not exceed the ADA requirements of 5.0%.

4.7 Elevation Difference

The top of the decks at each end of the bridge shall be constructed with a vertical elevation difference as shown in the plan set.

5.0 STRUCTURAL DESIGN LOADS

5.1 Dead Load

The bridge structure shall be designed for the total bridge weight including the final deck system.

5.2 Pedestrian Loading (PL)

The bridge structure shall be designed for a uniform pedestrian loading of 90 psf. This loading shall be patterned to produce the maximum load effects. Consideration of dynamic load allowance is not required with this loading.

5.3 Vehicle Load (VL)

When vehicular access is not prevented by permanent physical methods, the superstructure and deck system shall be designed for each of the following concentrated/vehicular loads:

- A concentrated load of 1,000 pounds placed on any area 2.5' by 2.5' square.
- A single truck shall be placed to produce the maximum load effects and shall not be placed in combination with the pedestrian load. The dynamic load allowance need not be considered for this loading. The truck shall be the following:
 - H10 vehicle (20,000 pound two-axle vehicle with 80% to rear axle).

5.4 Wind Load (WS)

Pedestrian bridges shall be designed for wind loads as specified in *AASHTO Signs*, Articles 3.8 and 3.9. The loading shall be applied over the exposed area in front elevations of both trusses including all enclosures.

In addition to the wind load specified above, a vertical uplift line load as specified in *AASHTO LRFD* Article 3.8.2 and determined as the force caused by a pressure of 20 psf over the full deck width, shall be applied concurrently. This loading shall be applied at the windward quarter point of the deck width.

5.5 Seismic (EQ)

The bridge structure shall be designed for seismic loading as specified in Section 3.10 of *AASHTO LRFD*. The transverse loads shall be calculated considering the transverse period of the bridge and longitudinal loads shall be calculated using a period of zero. A response modification factor of 0.8 shall be used for the calculation of forces applied to the bridge anchorage. A response modification factor of 1.0 shall be used for the calculation of bearing reactions. The transverse seismic load shall be applied to all the bearings and the longitudinal seismic load shall be applied to the fixed bearings only. The vertical bearing reactions shall be calculated using an overturning force on the bridge based on the center of gravity of the bridge times the transverse seismic load.

5.6 Fatigue Load (FL)

The fatigue loading shall be as specified in Section 11 of *AASHTO Signs*. The Natural Wind Gust specified in Article 11.7.1.2 and the Truck-Induced Gust specified in Article 11.7.1.3 of *AASHTO Signs* only need only be considered, as appropriate.

5.7 Combination of Loads

The load combinations and load factors to be used shall be as specified in *AASHTO LRFD* Table 3.4.1-1, with the following exceptions:

- Load combinations Strength II, Strength IV, and Strength V need not be considered.
- The load factor for Fatigue I load combination shall be taken as 1.0, and Fatigue II load combination need not be considered.

6.0 STRUCTURAL DESIGN CRITERIA

6.1 Modeling

The bridge shall be modeled and analyzed utilizing a three-dimensional computer software which shall account for moments induced in members due to joint fixity where applicable. Moments due to both truss deflection and joint eccentricity must be considered. All loads listed in Section 5 of these specifications shall be applied to the model and analyzed appropriately.

6.2 Lateral Frame and Member Design

The bridge shall be designed and proportioned such that appropriate lateral stiffness is provided locally and globally, to ensure that the structure is stable.

For bridges with overhead bracing members (box trusses), the vertical truss members, the floor beams, the top frame struts (truss portal) and their connections shall be proportioned to resist a lateral force applied at the top of the truss verticals. This lateral force shall be applied as an additional load to the top of the vertical to a two-dimensional portal frame, and the ensuing moment is then added to the forces obtained from the three-dimensional model. The magnitude of this lateral force shall not be less than 0.01 times the average factored design compressive force in the two adjacent top chord members. In addition the end portals (end verticals, end floor beams and end portal

struts) shall be proportioned to resist a lateral force applied at the top of the truss end vertical with a magnitude based on the lateral loads applied to the end portals only assuming all interior portals are pinned. It is also acceptable to design the end portals (end verticals, end floor beams and end portal struts) to carry all the lateral load in the truss system and not depend on any internal portals to carry lateral load. If this method is chosen all the interior portals must be pinned in the model to ensure that all lateral loads are being carried by the end portals.

The top chord shall be analyzed as a column with elastic lateral supports at the panel points, considering all moments due to in-plane and out-of-plane bending, along with moments due to eccentricities of the members. If the top chords are braced laterally with brace diagonals throughout the length of the bridge, an effective length factor $K=1.0$ may be used. If the top chords are not braced laterally with brace diagonals throughout the length of the bridge additional analysis may be necessary to determine the effective length factor K but in no case shall the effective length factor K be less than 1.3.

The floor beams shall be sized for the forces obtained from a simple span, pinned end analysis, or from the forces obtained from the three-dimensional model, whichever controls.

The diagonals and brace diagonals shall be analyzed as pinned-end connection members.

Interior verticals shall be analyzed as pinned-end connections in the longitudinal direction unless longitudinal forces are applied to the verticals such as when the brace diagonals are connected to floor beams on an H-Section floor beam configuration. When longitudinal forces are applied to the verticals they shall be analyzed as fixed-end connections.

All other members shall be analyzed as fixed-end connections.

HSS member connections shall be evaluated per the requirements of *AISC 360* Chapters J & K.

6.3 Deflections

The vertical deflection of the bridge due to the unfactored pedestrian live loading shall not exceed $1/360$ of the span length.

The horizontal deflection of the bridge under unfactored wind loading shall not exceed $1/360$ of the span length.

6.4 Fracture

The fracture toughness requirements and designation of Fracture Critical Member and Main Member designation are hereby waived for these structures.

6.5 Vibrations

Vibration of the structure shall not cause discomfort or concern to the users of the bridges. To assure this, the fundamental frequency (f) of the pedestrian bridge in the vertical direction, without live load, shall be greater than 3.0 hertz (Hz) to avoid the first harmonic. The fundamental frequency of the pedestrian bridge in the lateral direction, shall be greater than 1.3 Hz. If the fundamental frequency cannot satisfy these limitations, then the bridge should be proportioned such that either of the following criteria are satisfied:

$$f \geq 2.86 * \ln(180/W)$$

or

$$W \geq 180 * e^{(-0.35 * f)}$$

Where W is the weight of the bridge in kips and f is the fundamental frequency in the vertical direction in Hz.

For bridges longer than 85 ft and shorter than 125 ft the vertical and horizontal vibration must also meet the requirements for Bridge Class III with a Mean comfort level in accordance with *Setra*.

7.0 DECK SYSTEM

7.1 Deck System

Deck to be comprised of Reinforced Concrete designed to span from floor beam to floor beam.

Reinforced concrete shall be normal weight concrete (145 pounds per cubic foot maximum) and shall have a minimum compressive strength of 4,500 psi at 28 days, with an air content of 6% +/- 1.5%.

Concrete mix design, materials, quality, mixing, placement, finishing and testing shall be in accordance with the requirements of Section 552 of Federal Highway Administration Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects (FP-14). FP-14 can be viewed or downloaded at:
<http://flh.fhwa.dot.gov/resources/specs>

The surface of deck concrete shall be finished with a sidewalk finish per Section 552.14(c) of FP-14.

Stay-in-place galvanized (G90 coating) metal form deck shall be used and shall be designed to support the weight of the wet concrete plus a 20 pounds per square foot construction load. Form deck shall be shop attached to floor beams via self-drilling fasteners, welding or power actuated fasteners. Welding shall not be used on painted or galvanized bridges. The longitudinal sheet laps shall be attached with self-drilling self-tapping fasteners at 36-inch maximum spacing. The attachment of the form deck to the floor beams is only necessary to keep the form deck in place during transportation and during the concrete placement. The form deck is not to be used for diaphragm action or composite action and provides no structural benefit to the truss or the deck after the concrete is set. Metal form deck panels shall be of a length to span a minimum of two bays of the truss supports. The top of deck to bottom of form deck shall be as required to support the anticipated loads but shall not be less than 5".

The concrete deck shall be designed to span longitudinally from floor beam to floor beam and to support the loads specified in Section 5.0 of these specifications.

A distribution width of deck is allowed, to support the anticipated vehicle wheel loads. This distribution width (E in feet) shall be the narrower of the following:

- $E = 4 + .06S$
 - Where S is the floor beam spacing minus one-half of the floor beam width.

- One-half of the total driving width of the bridge deck.
- 0.75 times the lateral wheel spacing of the vehicle.
- $0.6S + \text{Wheel Width}$
 - Where S is the floor beam spacing minus one-half of the floor beam width.
 - The Wheel Width (in inches) is $2.5 * \sqrt[2.5]{(0.01 * P)}$, where P is the wheel load in pounds

Reinforcing steel shall be ASTM A615 Grade 60 non-coated bars. All bar bends, anchorage and splices shall be in accordance with AASHTO Specifications. Top reinforcing shall have a minimum clearance of 2" to the top of deck.

Bridge Manufacturer shall designate the estimated slab thickness and reinforcing requirements at time of quotation. These estimates are to be used for quoting purposes only. Actual quantities may vary during the final design process, with costs variances due to any changes to the quantities being the sole responsibility of the contractor. Contractor shall supply all concrete and reinforcing materials.

8.0 MATERIALS OF CONSTRUCTION

8.1 Structural Steel

All members of the truss and deck support system shall be fabricated from square or rectangular hollow structural shapes (HSS), with the exception that floor beams may be wide flange shapes. All open ends of end posts and floor support beams shall be capped. Drain holes shall be provided for all sections at the low point of the member that may become filled with water.

All bridges shall be fabricated using A847 for HSS sections and A588 for structural shapes and plates.

Minimum nominal thickness of primary hollow structural shapes shall be 1/4". Rolled shapes shall have a minimum thickness of 1/4".

8.2 Fasteners

Structural bolts used to field splice or connect all main members shall be ASTM F3125 Grade A325. The nuts for these structural bolts shall be ASTM A563. The Bridge Manufacturer shall determine the finish of the structural bolts. They will be either Type 3 (Weathering) or Type 1 (Hot-Dipped or Mechanically Galvanized) as specified by the Bridge Manufacturer.

Bolts used for the connection of a wood rub rail shall be 18-8 or 316 Stainless Steel, 1/4" diameter carriage bolts.

Screws for the attachment of wood deck shall be steel, 5/16" diameter, six lobe drive, self-tapping screws. The screws shall have flat heads for the screws in the wood and round heads for the screws on the edge cover. The screws shall have a protective coating that will prevent corrosion due to contact with treated wood and environmental exposure.

Self-drilling fasteners for attachment of the form decking shall be #14 x 1" zinc plated hex washer head Tek screws.

Power Actuated fasteners shall be Hilti sheet metal nail X-ENP-19 fastener.

Other miscellaneous fasteners shall be ASTM A307 zinc plated or galvanized, as determined by the Bridge Manufacturer.

9.0 FINISH

For corrosion resistant high-strength low-alloy (weathering) steel no surface finish treatment is necessary. All exposed surfaces of structural steel to be cleaned in accordance with Steel Structures Painting Council Surface Preparation Specifications No. 7, SSPC -SP7 brush-off blast cleaning. Exposed surfaces of steel shall be defined as those surfaces seen from the deck or from the outside and bottom of the structure. All other surfaces to have standard mill finish. The steel will be allowed to form a protective weathering patina over time.

10.0 ATTACHMENTS

10.1 Wire Mesh Panels

Mesh panels consisting of steel wire mesh infill and steel frames shall be installed. Mesh wire shall be steel with a minimum diameter of 3/16". Mesh infill edges shall be enclosed within a U-edging frame or sandwich plate frame that shall be bolted to supports at a maximum 4'-0" on center and within 1'-0" of all corners. U-edging frame shall be 7/16" x 1-1/4" x 14 ga (min). Sandwich plate frames shall be 2" x 3/16" plates on each side of the mesh infill edges. Frames shall have longitudinally slotted holes for connection to supporting members. Mesh wires shall be welded to the inside of the frame at every 3rd wire (minimum). Frame corners shall be welded and ground smooth. Frames shall be no larger than 8'-0" in the shortest direction.

Mesh panels shall be installed on both side truss, on the inside of the structure for the full height of the side truss.

Wire mesh openings shall be a maximum of 2-inch.

Mesh panels shall be zinc plated with clear chromate after fabrication, powder coated with one (1) primer coat of zinc rich paint and finished with one (1) coat of polyester TGIC weather resistant powder topcoat. Color to be Pantone PMS 289 'Brilliant Blue' unless shown otherwise in the plan set.

All elements of the welded wire mesh system (support frames, posts, mesh, attachments, etc.) shall be designed to support a uniform load of 15 pounds per square foot applied normal to the entire surface.

Safety rail system to extend over landings to ensure landings meet ADA requirements.
Truss system to extend along with safety rail system to provide a uniform height over the landings.

10.2 Toe Plate

Toe Plates shall be steel channel shape section, 4" high by 1" wide minimum with the end of the channel legs welded directly to the inside face of the truss verticals. The maximum unsupported length shall be 7'-0". If the vertical spacing is greater than the maximum unsupported length, mid-bay supports will be required. When the ends of the toe plates near the end of the bridge are not covered by the end verticals, they shall be capped and ground smooth. The bottom of the toe plate shall be placed 2" above the finished height of the deck. All seams of the toe plates shall be fully welded to give the appearance of a continuous member (welding should be located at a support member). If toe plates are incorporated into

a safety rail system, they may be modified as needed but shall be a minimum of 4" high.

10.3 Rub Rail

Rub Rails shall be provided at a height of 3'-6" from top of the deck to the top of rub rail. Rub rails shall be steel channel shape section, 4" high by 1" wide minimum with the end of the channel legs welded directly to the inside face of the truss verticals. The maximum unsupported length shall be 7'-0". If the vertical spacing is greater than the maximum unsupported length, mid-bay supports will be required. When the ends of the rub rails near the end of the bridge are not covered by the end verticals, they shall be capped and ground smooth. All seams of the rub rails shall be fully welded to give the appearance of a continuous member (welding should be located at a support member). If rub rails are incorporated into a safety rail system, they may be modified as needed but shall be a minimum of 4" high.

10.4 Expansion Joint

The gap between the end of the bridge deck and the back wall of the foundation system be sized to accommodate bridge movements due to thermal expansion of the bridge over the design temperature range. The gaps shall be covered with a steel cover which attaches to the bridge and extends over the gap and onto the top of the foundation system back wall. The steel cover shall have its edges rounded or beveled at a 45-degree angle. A compression seal sized for movement and rated for pedestrian traffic may be used in place of the steel cover.

11.0 BEARINGS

11.1 Bearing Type

Bearing type and size shall be designed by the Bridge Manufacturer based on anticipated loads and movements.

11.2 Design Temperature Range

The Design Temperature Range will be site specific and will be determined per *AASHTO LRFD* Article 3.12.2.

11.3 Non-Shrink Grouting

The bridge will be supplied with a lower setting plate. This setting plate shall be leveled and shimmed to the proper elevation. The space between the lower surface of the setting plate and the foundation surface shall be filled with a non-shrink grout capable of achieving a minimum compressive strength equal to or greater than the strength of the foundation concrete. The cost of the leveling, shimming, and non-shrink grout shall be the responsibility of the Contractor.

12.0 FOUNDATIONS

12.1 Foundation System

Foundation system shall utilize abutments designed by the Foundation Engineer in conjunction with the bridge bearing requirements and dimensions provided by the Bridge Manufacturer and the site-specific geotechnical information provided by the Geotechnical Engineer. All abutment dimensions and materials shall be shown on the final contract plans.

12.2 Anchor Bolts

Bridge Manufacturer shall design the diameter and grade of anchor bolts, based on the shear and tensile strength of the anchor bolt material only. All design considerations regarding concrete breakout strength in shear and tension, pullout strength, concrete side-face blowout strength, concrete pry out strength, embedment depth, type of anchorage or any other concrete failure modes are the responsibility of the Foundation Engineer and shall be shown on the final contract plans. All anchor bolts shall be galvanized. The Foundation Engineer shall determine if the anchor bolts shall be cast-in-place, drilled/epoxy, or expansion anchors. Anchor bolts shall be provided and installed by the Contractor.

13.0 FABRICATION

13.1 Welding

Welding procedures and weld qualification test procedures shall conform to the provisions of *AWS D1.1*. Filler metal shall be in accordance with the applicable AWS Filler Metal Specification and shall match the corrosion properties of the base metal.

13.2 Welders

Welders shall be qualified for each process and position used while fabricating the bridge. Qualification tests shall be in accordance with AWS D1.1. All weld qualifications and records shall be kept in accordance with the Fabricator's Quality Assurance Manual which has been approved and audited by AISC as the basis for certification.

13.3 Shop Splices

Shop splices for main truss members shall be full penetration welds all around the perimeter of the member. These shop splices shall be performed using a full perimeter backing plate. After welding of the shop splices, the weld shall be ground smooth to match the perimeter of the member. Grinding these welds smooth is required and will be grounds for rejection of the bridge upon delivery if not completed.

Shop splices for all horizontal rail components to be located at the centerline of the truss verticals, each end welded to the truss vertical and seal welded together. Exposed surface of the seal welds as seen from the deck shall be ground smooth.

Shop spliced for all horizontal stringers to be located at the centerline of the floor beams, each end welded to the floor beam and seal welded together.

13.4 Bolted Splices

For shipping purposes, the bridge may be fabricated in sections. Sections shall be field assembled using bolted connections. No field welding of members shall be allowed.

The chord members of the bridge shall be bolted such that at least two faces of the member are bolted. This is to provide reasonable force distribution around the perimeter of the member. Bolted splices shall be designed and fabricated such that the head of the bolt and washer are the only item exposed. No through-bolting of the member is allowed. The nuts of the fastener cannot be welded to the internal splice plate and shall be held in plate with a nut capture system per Patent US 10,267,345 B2 or equal.

The diagonals and brace diagonals shall be bolted utilizing a through-bolt system with

plates on the exterior faces of the members. An internal stiffening plate is required to keep the member from crushing during the bolt tightening process.

All bolted connections are considered to be pretensioned or slip-critical connections. All bolts are to be pretensioned per the requirements of section 8.2 of the Specification for Structural Joints Using High-Strength Bolts. Recommended tightening method of all structural bolts shall be Turn-of-the-Nut Pretensioning.

14.0 QUALITY CONTROL

14.1 AISC Certification

The bridge shall be fabricated in a shop owned by the Bridge Manufacturer. This facility shall have up to date quality certification by AISC as Certified Bridge Fabricator - Advanced (Major) with Fracture Critical Endorsement and Complex Coating Endorsement (P1-Enclosed or P2-Covered).

14.2 Certified Weld Inspector

The Bridge Manufacturer shall employ at least two Certified Weld Inspectors (CWI), with endorsement by AWS QC1. At least one CWI shall be present during the complete fabrication of the bridge. The CWI shall provide written documentation that the bridge has been fabricated in accordance with these specifications and the approved design drawings.

14.3 Documentation

Material Certifications shall be available for review for all materials within the bridge. Traceability of heat numbers is required for all structural steel.

Documentation showing the performance of all critical quality checks shall also be made available for review by the Engineer or Owner.

14.4 Non-Destructive Testing

All welds within the structure, shall be visually inspected for conformance to size, under cut, profile and finish.

All shop splices of main truss members shall be magnetic particle tested.

15.0 DELIVERY AND ERECTION

15.1 Delivery

Delivery shall be made via truck to a location nearest the site which is accessible to normal over-the-road equipment. All trucks delivering bridge materials will need to be unloaded at the time of arrival. If the erection Contractor needs special delivery or delivery is restricted, they shall notify the Bridge Manufacturer prior to bid date. This includes site issues which may prevent over-the-road equipment from accessing the site. Steerable dollies are not used in the cost provided by the Bridge Manufacturer. Determining the length of bridge section which can be delivered is the responsibility of the Contractor and shall be communicated to the Bridge Manufacturer prior to the bid date.

15.2 Installation & Lifting Procedures.

The Bridge Manufacturer will provide standard typical written procedures for lifting and splicing the bridge. All actual means, methods, equipment and sequence of erection used are the responsibility of the Contractor.

16.0 WARRANTY

The Bridge Manufacturer shall warrant, at the time of delivery, that it has conveyed good title to its steel structure, free of liens and encumbrances created by the Bridge Manufacturer, and that its steel structure is free of defects in design, material and workmanship. This warranty shall be valid for a period of one (1) year from the earlier date of delivery or 60 days after final fabrication is complete. Durable tropical hardwood decking and hardwood attachments shall carry a one (1) year warranty against rot, termite damage, or fungal decay. This warranty shall specifically exclude all softwood and decking material such as Treated Southern Yellow Pine, Douglas Fir and Wood thermoplastic composite lumber (e.g. Trex). Paint, galvanizing and other special coatings, if warranted, shall be warranted by the coating manufacturer in accordance with their warranty provisions and are not covered under the Bridge Manufacturer's warranty.

This warranty shall not cover defects in the steel structure caused by abuse, misuse, overloading, accident, improper installation, maintenance, alteration, or any other cause not expressly warranted. This warranty shall not cover damage resulting from or relating to the use of any kind of de-icing material. This warranty shall be void unless owner's records are supplied that show compliance with the minimum guidelines specified in the in the Bridge Manufacturer's inspection and maintenance procedures.

Repair, replacement, or adjustment, in Bridge Manufacturer's sole discretion, shall be the exclusive remedy for any defects under this warranty. This warranty shall exclude liability for any indirect, consequential, or incidental damages.

SPECIAL PROVISIONS FOR PREFABRICATED GATEWAY® FULL THROUGH (BOX) TRUSS CONTINENTAL® PEDESTRIAN BRIDGE

Span 03 – Overpass Bridge Over Babcock Road

1.0 GENERAL

1.1 Scope

These specifications are for fully engineered Gateway® full through (box) truss (overhead bracing required) bridge of steel construction and shall be regarded as minimum standards for design and fabrication. The work included under this item shall consist of design, fabricating, finishing and transporting the steel truss bridge superstructure including bearings. These specifications are based on products designed and manufactured by Contech Engineered Solutions LLC.

1.2 Definitions

- *Owner*: Entity who ultimately will own the bridge.
- *Engineer*: Engineering Entity or Firm who will be representing the Owner.
- *Contractor*: Entity who will be installing, and/or purchasing, the bridge.
- *Foundation Engineer*: Engineering Entity or Firm who will be designing and detailing the foundation system.
- *Geotechnical Engineer*: Engineering Entity or Firm who will be responsible for providing the Geotechnical information necessary to design the foundation system.
- *Bridge Manufacturer*: Firm who will be designing and supplying the bridge in accordance with these Special Provisions.

1.3 Qualified Bridge Manufacturer

Each Contractor is required to identify their intended supplier as part of the bid submittal. Qualified Bridge Manufacturers must have at least 5 years of experience fabricating these types of structures and shall have an up to date quality certification by AISC per Section 14.1 of these specifications. All suppliers shall fabricate their product utilizing a modern fabrication facility owned and operated by the Bridge Manufacturer that includes the use of CNC beam drilling machines, no brokers are allowed.

Bridge Manufacturer (or approved equal):

Contech Engineered Solutions LLC
1-800-338-1122

E-mail: info@conteches.com

Bridge Consultant: jonathan.mohler@conteches.com; 210-383-5360

ADDENDUM 01

Bailey Bridges, Inc.
dba Pioneer Bridges
1-866-708-5778
E-mail: www.pioneerbridges.com

Bridge Manufacturers, other than those listed above, may be used provided the Engineer receives a written request at least 14 days prior to the bid. The written request shall accompany the following information:

- Bridge Manufacturer's Product Literature,
- Name and resume of Bridge Manufacturer's design professional who will be signing and sealing the engineering submittals,
- Copy of current AISC certification,
- Representative copies of detailed drawings, field procedures, calculations, quality control manual, welder's certifications, proof of two (2) on staff C.W.I., proof of two (2) in-house Texas Professional Engineers,
- At least 10 similar overpass projects completed in the last 15 years; to include project name, owner, location, size, year of fabrication, contact person,
- At least 5 TxDOT truss projects (on system or off system) completed in the past 10 years; to include project name, owner, location, size, year of fabrication, contact person,
- Certification by the Bridge Manufacturer's Design Professional that the bridge proposed will be in accordance with all project development done up to the date of these specifications.

The above will be evaluated by the Engineer for accuracy and ability to provide the bridge in accordance with these specifications. Bridge Manufacturers other than those listed above may only be used if the Engineer provides written approval via addendum 10 days prior to the bid. The Engineer's ruling shall be final.

A representative employed by the Manufacturer is to be in attendance at the project pre-bid and pre-construction meeting, as well as during erection.

1.4 Bridge Manufacturer's Design Professional and Submittals

The Bridge Manufacturer shall have as a direct employee, an engineer who is experienced in bridge design to be in responsible charge of all engineering related task and design. The engineer shall have a minimum of 10 years of experience in bridge design and be a currently licensed civil or structural Professional Engineer in the State of Texas and shall be the engineer who will seal and sign the plans.

Engineering drawings, 11x17 format, shall be prepared and submitted to the Contractor or Owner for their review after receipt of the order. Submittal drawings shall be unique drawings, prepared to illustrate the specific portion of the bridge being fabricated. All relative design information such as member size, ASTM/AASHTO material specification, dimensions necessary to fabricate and required welding shall be clearly shown on the drawings. Drawings shall have referenced details and sheet numbers. All drawings shall be stamped, signed and dated by the Bridge Manufacturer's Design Professional.

Structural calculations for the design of the bridge superstructure shall be prepared by the Bridge Manufacturer and submitted for review after receipt of the order. Calculations shall include complete design, analysis and code checks for the controlling members, connectivity and support conditions, truss stability checks, deck design, deflection checks, bearings and all splices.

2.0 APPLICABLE CODES AND STANDARDS

2.1 Governing Specifications

Bridge shall be designed in compliance with the AASHTO LRFD Guide Specifications for the Design of Pedestrian Bridges, 2009 (*AASHTO Ped*). Calculations shall be in accordance with this document, and formulas shall reference the appropriate sections.

2.2 Other Reference Codes, Specifications and Standards

- AASHTO LRFD Bridge Design Specifications, 9th Edition, 2020 (*AASHTO*

LRFD)

- AASHTO LRFD Specifications for Structural Supports for Highway Signs, Luminares, and Traffic Signals, First Edition, 2005 (*AASHTO Signs*)
- AISC Steel Construction Manual, 15th Edition, 2017 (*AISC*)
- ANSI/AISC 360-16 Specification for Structural Steel Buildings, 2016 (*AISC 360*)
- American Welding Society, Structural Welding Code, D1.1, 2015 (*AWS D1.1*)
- ASCE/SEI 7-10 Minimum Design Loads for Buildings and Other Structures, 2010 (*ASCE 7*)
- Setra Technical Guide for Footbridges, 2006 (*Setra*)
- ANSI/AWC NDC-2015 National Design Specification for Wood Construction, 2015 (*NDS*)
- Tropical Timbers of the World, US Forest Products Laboratory

The AASHTO LRFD Guide Specifications for the Design of Pedestrian Bridges shall control if any conflicting requirements occur with the Other Reference Documents and/or other local Codes.

3.0 BRIDGE SYSTEM TYPE

3.1 Bridge Model and Truss Elevation

The bridge model shall be a Gateway® full through (box) truss (overhead bracing required). The vertical trusses shall be designed such that the top and bottom chord members are parallel for the entire length of bridge. The interior verticals of the trusses shall be perpendicular to the top face of the bottom chord and the end verticals of the trusses shall be plumb. Trusses shall be laid out such that diagonals shall be at an angle of 30-degrees or more with respect to the bottom chord.

3.2 Diagonal Style

The vertical truss shall use a single-diagonal, Pratt configuration, where all the diagonals are in tension for gravity loads.

3.3 Floor Beam Location

The bridge shall utilize an H-Section configuration where the ends of the floor beams are welded only to the interior face of the verticals. The distance from the top of deck to the bottom of the bottom chord shall be determined by the Bridge Manufacturer during final design.

4.0 BRIDGE GEOMETRY

4.1 Span Length

The bridge span length shall be 150'-0" (horizontal straight line dimension) and measured from end to end of the bridge truss, not including the end dam, any deck extension or bearing that extends beyond the end of the truss.

4.2 Width

The bridge width shall provide a minimum clearance of 14'-0" and shall be as measured from the inside face of structural truss elements at the deck level. The bridge will also have a 6" curb system to allow for water to flow off the bridge and not onto the roadway. The rub rail will be extended to have its surface flush with the curb.

4.3 Inside Clear Height Above Deck

The top of the top chord above the deck dimension shall be as determined by the Bridge Manufacturer; however, at no point in the bridge shall the inside clear height be less than 10'-0". The clear height is defined as the distance from the high point of the deck to the bottom of the overhead steel members.

4.4 Lower Steel Clearance

The Bridge Manufacturer shall determine the distance from the top of the deck (measured from the highest point of the deck) to the bottom of any steel member.

4.5 Truss Bay Spacing

The number of bays and the dimension of the panel points shall be determined by the Bridge Manufacturer.

4.6 Camber

A single simple-span bridge shall have a vertical camber dimension at the mid-span determined by the Bridge Manufacturer such that the deck slopes at any point on the bridge do not exceed the ADA requirements of 5.0%.

4.7 Elevation Difference

The top of the decks shall be at the same elevation at each end of the bridge.

5.0 STRUCTURAL DESIGN LOADS

5.1 Dead Load

The bridge structure shall be designed for the total bridge weight including the final deck system.

5.2 Pedestrian Loading (PL)

The bridge structure shall be designed for a uniform pedestrian loading of 90 psf. This loading shall be patterned to produce the maximum load effects. Consideration of dynamic load allowance is not required with this loading.

5.3 Vehicle Load (VL)

When vehicular access is not prevented by permanent physical methods, the superstructure and deck system shall be designed for each of the following concentrated/vehicular loads:

- A concentrated load of 1,000 pounds placed on any area 2.5' by 2.5' square.
- A single truck shall be placed to produce the maximum load effects and shall not be placed in combination with the pedestrian load. The dynamic load allowance need not be considered for this loading. The truck shall be the following:
 - H10 vehicle (20,000 pound two-axle vehicle with 80% to rear axle).

5.4 Wind Load (WS)

Pedestrian bridges shall be designed for wind loads as specified in *AASHTO Signs*, Articles 3.8 and 3.9. The loading shall be applied over the exposed area in front

elevations of both trusses including all enclosures.

In addition to the wind load specified above, a vertical uplift line load as specified in *AASHTO LRFD* Article 3.8.2 and determined as the force caused by a pressure of 20 psf over the full deck width, shall be applied concurrently. This loading shall be applied at the windward quarter point of the deck width.

5.5 Seismic (EQ)

The bridge structure shall be designed for seismic loading as specified in Section 3.10 of *AASHTO LRFD*. The transverse loads shall be calculated considering the transverse period of the bridge and longitudinal loads shall be calculated using a period of zero. A response modification factor of 0.8 shall be used for the calculation of forces applied to the bridge anchorage. A response modification factor of 1.0 shall be used for the calculation of bearing reactions. The transverse seismic load shall be applied to all the bearings and the longitudinal seismic load shall be applied to the fixed bearings only. The vertical bearing reactions shall be calculated using an overturning force on the bridge based on the center of gravity of the bridge times the transverse seismic load.

5.6 Fatigue Load (FL)

The fatigue loading shall be as specified in Section 11 of *AASHTO Signs*. The Natural Wind Gust specified in Article 11.7.1.2 and the Truck-Induced Gust specified in Article 11.7.1.3 of *AASHTO Signs* only need only be considered, as appropriate.

5.7 Other Load

The bridge structure shall be designed for a signage loading of 25 plf along the truss.

5.8 Combination of Loads

The load combinations and load factors to be used shall be as specified in *AASHTO LRFD* Table 3.4.1-1, with the following exceptions:

- Load combinations Strength II, Strength IV, and Strength V need not be considered.
- The load factor for Fatigue I load combination shall be taken as 1.0, and Fatigue II load combination need not be considered.

6.0 STRUCTURAL DESIGN CRITERIA

6.1 Modeling

The bridge shall be modeled and analyzed utilizing a three-dimensional computer software which shall account for moments induced in members due to joint fixity where applicable. Moments due to both truss deflection and joint eccentricity must be considered. All loads listed in Section 5 of these specifications shall be applied to the model and analyzed appropriately.

6.2 Lateral Frame and Member Design

The bridge shall be designed and proportioned such that appropriate lateral stiffness is provided locally and globally, to ensure that the structure is stable.

For bridges with overhead bracing members (box trusses), the vertical truss members, the floor beams, the top frame struts (truss portal) and their connections shall be

proportioned to resist a lateral force applied at the top of the truss verticals. This lateral force shall be applied as an additional load to the top of the vertical to a two-dimensional portal frame, and the ensuing moment is then added to the forces obtained from the three-dimensional model. The magnitude of this lateral force shall not be less than 0.01 times the average factored design compressive force in the two adjacent top chord members. In addition the end portals (end verticals, end floor beams and end portal struts) shall be proportioned to resist a lateral force applied at the top of the truss end vertical with a magnitude based on the lateral loads applied to the end portals only assuming all interior portals are pinned. It is also acceptable to design the end portals (end verticals, end floor beams and end portal struts) to carry all the lateral load in the truss system and not depend on any internal portals to carry lateral load. If this method is chosen all the interior portals must be pinned in the model to ensure that all lateral loads are being carried by the end portals.

The top chord shall be analyzed as a column with elastic lateral supports at the panel points, considering all moments due to in-plane and out-of-plane bending, along with moments due to eccentricities of the members. If the top chords are braced laterally with brace diagonals throughout the length of the bridge, an effective length factor $K=1.0$ may be used. If the top chords are not braced laterally with brace diagonals throughout the length of the bridge additional analysis may be necessary to determine the effective length factor K but in no case shall the effective length factor K be less than 1.3.

The floor beams shall be sized for the forces obtained from a simple span, pinned end analysis, or from the forces obtained from the three-dimensional model, whichever controls.

The diagonals and brace diagonals shall be analyzed as pinned-end connection members.

Interior verticals shall be analyzed as pinned-end connections in the longitudinal direction unless longitudinal forces are applied to the verticals such as when the brace diagonals are connected to floor beams on an H-Section floor beam configuration. When longitudinal forces are applied to the verticals they shall be analyzed as fixed-end connections.

All other members shall be analyzed as fixed-end connections.

HSS member connections shall be evaluated per the requirements of *AISC 360* Chapters J & K.

6.3 Deflections

The vertical deflection of the bridge due to the unfactored pedestrian live loading shall not exceed $1/360$ of the span length.

The horizontal deflection of the bridge under unfactored wind loading shall not exceed $1/360$ of the span length.

6.4 Fracture

The fracture toughness requirements and designation of Fracture Critical Member and Main Member designation are hereby waived for these structures.

6.5 Vibrations

Vibration of the structure shall not cause discomfort or concern to the users of the

bridges. To assure this, the fundamental frequency (f) of the pedestrian bridge in the vertical direction, without live load, shall be greater than 3.0 hertz (Hz) to avoid the first harmonic. The fundamental frequency of the pedestrian bridge in the lateral direction, shall be greater than 1.3 Hz. If the fundamental frequency cannot satisfy these limitations, then the bridge should be proportioned such that either of the following criteria are satisfied:

$$f \geq 2.86 * \ln(180/W)$$

or

$$W \geq 180 * e^{(-0.35 * f)}$$

Where W is the weight of the bridge in kips and f is the fundamental frequency in the vertical direction in Hz.

For bridges longer than 85 ft and shorter than 125 ft the vertical and horizontal vibration must also meet the requirements for Bridge Class III with a Mean comfort level in accordance with *Setra*.

7.0 DECK SYSTEM

7.1 Deck System

Deck to be comprised of Reinforced Concrete designed to span from floor beam to floor beam.

Reinforced concrete shall be normal weight concrete (145 pounds per cubic foot maximum) and shall have a minimum compressive strength of 4,500 psi at 28 days, with an air content of 6% +/- 1.5%.

Concrete mix design, materials, quality, mixing, placement, finishing and testing shall be in accordance with the requirements of Section 552 of Federal Highway Administration Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects (FP-14). FP-14 can be viewed or downloaded at:
<http://flh.fhwa.dot.gov/resources/specs>

The surface of deck concrete shall be finished with a sidewalk finish per Section 552.14(c) of FP-14.

Stay-in-place galvanized (G90 coating) metal form deck shall be used and shall be designed to support the weight of the wet concrete plus a 20 pounds per square foot construction load. Form deck shall be shop attached to floor beams via self-drilling fasteners, welding or power actuated fasteners. Welding shall not be used on painted or galvanized bridges. The longitudinal sheet laps shall be attached with self-drilling self-tapping fasteners at 36-inch maximum spacing. The attachment of the form deck to the floor beams is only necessary to keep the form deck in place during transportation and during the concrete placement. The form deck is not to be used for diaphragm action or composite action and provides no structural benefit to the truss or the deck after the concrete is set. Metal form deck panels shall be of a length to span a minimum of two bays of the truss supports. The top of deck to bottom of form deck shall be as required to support the anticipated loads but shall not be less than 5".

The concrete deck shall be designed to span longitudinally from floor beam to floor beam and to support the loads specified in Section 5.0 of these specifications.

A distribution width of deck is allowed, to support the anticipated vehicle wheel loads. This distribution width (E in feet) shall be the narrower of the following:

- $E = 4 + .06S$
 - Where S is the floor beam spacing minus one-half of the floor beam width.
- One-half of the total driving width of the bridge deck.
- 0.75 times the lateral wheel spacing of the vehicle.
- $0.6S + \text{Wheel Width}$
 - Where S is the floor beam spacing minus one-half of the floor beam width.
 - The Wheel Width (in inches) is $2.5 * \sqrt[2.5]{(0.01 * P)}$, where P is the wheel load in pounds

Reinforcing steel shall be ASTM A615 Grade 60 non-coated bars. All bar bends, anchorage and splices shall be in accordance with AASHTO Specifications. Top reinforcing shall have a minimum clearance of 2" to the top of deck.

Bridge Manufacturer shall designate the estimated slab thickness and reinforcing requirements at time of quotation. These estimates are to be used for quoting purposes only. Actual quantities may vary during the final design process, with costs variances due to any changes to the quantities being the sole responsibility of the contractor. Contractor shall supply all concrete and reinforcing materials.

8.0 MATERIALS OF CONSTRUCTION

8.1 Structural Steel

All members of the truss and deck support system shall be fabricated from square or rectangular hollow structural shapes (HSS), with the exception that floor beams may be wide flange shapes. All open ends of end posts and floor support beams shall be capped. Drain holes shall be provided for all sections at the low point of the member that may become filled with water.

All bridges shall be fabricated using A847 for HSS sections and A588 for structural shapes and plates.

Minimum nominal thickness of primary hollow structural shapes shall be 1/4". Rolled shapes shall have a minimum thickness of 1/4".

8.2 Fasteners

Structural bolts used to field splice or connect all main members shall be ASTM F3125 Grade A325. The nuts for these structural bolts shall be ASTM A563. The Bridge Manufacturer shall determine the finish of the structural bolts. They will be either Type 3 (Weathering) or Type 1 (Hot-Dipped or Mechanically Galvanized) as specified by the Bridge Manufacturer.

Bolts used for the connection of a wood rub rail shall be 18-8 or 316 Stainless Steel, 1/4" diameter carriage bolts.

Screws for the attachment of wood deck shall be steel, 5/16" diameter, six lobe drive, self-tapping screws. The screws shall have flat heads for the screws in the wood and round heads for the screws on the edge cover. The screws shall have a protective coating that will prevent corrosion due to contact with treated wood and environmental

exposure.

Self-drilling fasteners for attachment of the form decking shall be #14 x 1" zinc plated hex washer head Tek screws.

Power Actuated fasteners shall be Hilti sheet metal nail X-ENP-19 fastener.

Other miscellaneous fasteners shall be ASTM A307 zinc plated or galvanized, as determined by the Bridge Manufacturer.

9.0 FINISH

For corrosion resistant high-strength low-alloy (weathering) steel no surface finish treatment is necessary. All exposed surfaces of structural steel to be cleaned in accordance with Steel Structures Painting Council Surface Preparation Specifications No. 7, SSPC -SP7 brush-off blast cleaning. Exposed surfaces of steel shall be defined as those surfaces seen from the deck or from the outside and bottom of the structure. All other surfaces to have standard mill finish. The steel will be allowed to form a protective weathering patina over time.

10.0 ATTACHMENTS

10.1 Wire Mesh Panels

Mesh panels consisting of steel wire mesh infill and steel frames shall be installed. Mesh wire shall be steel with a minimum diameter of 3/16". Mesh infill edges shall be enclosed within a U-edging frame or sandwich plate frame that shall be bolted to supports at a maximum 4'-0" on center and within 1'-0" of all corners. U-edging frame shall be 7/16" x 1-1/4" x 14 ga (min). Sandwich plate frames shall be 2" x 3/16" plates on each side of the mesh infill edges. Frames shall have longitudinally slotted holes for connection to supporting members. Mesh wires shall be welded to the inside of the frame at every 3rd wire (minimum). Frame corners shall be welded and ground smooth. Frames shall be no larger than 8'-0" in the shortest direction.

Mesh panels shall be installed on both side truss, on the inside of the structure for the full height of the side truss. Mesh panels will be triangular in shape in order to create the pattern shown in the plan set.

Wire mesh openings shall be a maximum of 2-inch.

Mesh panels shall be zinc plated with clear chromate after fabrication, powder coated with one (1) primer coat of zinc rich paint and finished with one (1) coat of polyester TGIC weather resistant powder topcoat. Color to be Pantone PMS 289 'Brilliant Blue' and Pantone PMS 289 'Navy Blue' unless shown otherwise in the plan set. Pattern shown in plan set.

All elements of the welded wire mesh system (support frames, posts, mesh, attachments, etc.) shall be designed to support a uniform load of 15 pounds per square foot applied normal to the entire surface.

10.2 Toe Plate

This span will not have a toe plate due to the curb system along the span of the bridge.

10.3 Rub Rail

Rub Rails shall be provided at a height of 3'-6" from top of the deck to the top of rub rail.

Rub rails shall be steel channel shape section, 4" high by 1" wide minimum with the end of the channel legs welded directly to the inside face of the truss verticals. The maximum unsupported length shall be 7'-0". If the vertical spacing is greater than the maximum unsupported length, mid-bay supports will be required. When the ends of the rub rails near the end of the bridge are not covered by the end verticals, they shall be capped and ground smooth. All seams of the rub rails shall be fully welded to give the appearance of a continuous member (welding should be located at a support member). If rub rails are incorporated into a safety rail system, they may be modified as needed but shall be a minimum of 4" high.

10.4 Expansion Joint

The gap between the end of the bridge deck and the back wall of the foundation system be sized to accommodate bridge movements due to thermal expansion of the bridge over the design temperature range. The gaps shall be covered with a steel cover which attaches to the bridge and extends over the gap and onto the top of the foundation system back wall. The steel cover shall have its edges rounded or beveled at a 45-degree angle. A compression seal sized for movement and rated for pedestrian traffic may be used in place of the steel cover.

11.0 BEARINGS

Bearing Type

Bearing type and size shall be designed by the Bridge Manufacturer based on anticipated loads and movements.

11.2 Design Temperature Range

The Design Temperature Range will be site specific and will be determined per *AASHTO LRFD* Article 3.12.2.

11.3 Non-Shrink Grouting

The bridge will be supplied with a lower setting plate. This setting plate shall be leveled and shimmed to the proper elevation. The space between the lower surface of the setting plate and the foundation surface shall be filled with a non-shrink grout capable of achieving a minimum compressive strength equal to or greater than the strength of the foundation concrete. The cost of the leveling, shimming, and non-shrink grout shall be the responsibility of the Contractor.

12.0 FOUNDATIONS

12.1 Foundation System

Foundation system shall utilize abutments designed by the Foundation Engineer in conjunction with the bridge bearing requirements and dimensions provided by the Bridge Manufacturer and the site-specific geotechnical information provided by the Geotechnical Engineer. All abutment dimensions and materials shall be shown on the final contract plans.

12.2 Anchor Bolts

Bridge Manufacturer shall design the diameter and grade of anchor bolts, based on the shear and tensile strength of the anchor bolt material only. All design considerations

regarding concrete breakout strength in shear and tension, pullout strength, concrete side-face blowout strength, concrete pry out strength, embedment depth, type of anchorage or any other concrete failure modes are the responsibility of the Foundation Engineer and shall be shown on the final contract plans. All anchor bolts shall be galvanized. The Foundation Engineer shall determine if the anchor bolts shall be cast-in-place, drilled/epoxy, or expansion anchors. Anchor bolts shall be provided and installed by the Contractor.

13.0 FABRICATION

13.1 Welding

Welding procedures and weld qualification test procedures shall conform to the provisions of *AWS D1.1*. Filler metal shall be in accordance with the applicable AWS Filler Metal Specification and shall match the corrosion properties of the base metal.

13.2 Welders

Welders shall be qualified for each process and position used while fabricating the bridge. Qualification tests shall be in accordance with AWS D1.1. All weld qualifications and records shall be kept in accordance with the Fabricator's Quality Assurance Manual which has been approved and audited by AISC as the basis for certification.

13.3 Shop Splices

Shop splices for main truss members shall be full penetration welds all around the perimeter of the member. These shop splices shall be performed using a full perimeter backing plate. After welding of the shop splices, the weld shall be ground smooth to match the perimeter of the member. Grinding these welds smooth is required and will be grounds for rejection of the bridge upon delivery if not completed.

Shop splices for all horizontal rail components to be located at the centerline of the truss verticals, each end welded to the truss vertical and seal welded together. Exposed surface of the seal welds as seen from the deck shall be ground smooth.

Shop spliced for all horizontal stringers to be located at the centerline of the floor beams, each end welded to the floor beam and seal welded together.

13.4 Bolted Splices

For shipping purposes, the bridge may be fabricated in sections. Sections shall be field assembled using bolted connections. No field welding of members shall be allowed.

The chord members of the bridge shall be bolted such that at least two faces of the member are bolted. This is to provide reasonable force distribution around the perimeter of the member. Bolted splices shall be designed and fabricated such that the head of the bolt and washer are the only item exposed. No through-bolting of the member is allowed. The nuts of the fastener cannot be welded to the internal splice plate and shall be held in plate with a nut capture system per Patent US 10,267,345 B2 or equal.

The diagonals and brace diagonals shall be bolted utilizing a through-bolt system with plates on the exterior faces of the members. An internal stiffening plate is required to keep the member from crushing during the bolt tightening process.

All bolted connections are considered to be pretensioned or slip-critical connections. All

bolts are to be pretensioned per the requirements of section 8.2 of the Specification for Structural Joints Using High-Strength Bolts. Recommended tightening method of all structural bolts shall be Turn-of-the-Nut Pretensioning.

14.0 QUALITY CONTROL

14.1 AISC Certification

The bridge shall be fabricated in a shop owned by the Bridge Manufacturer. This facility shall have up to date quality certification by AISC as Certified Bridge Fabricator - Advanced (Major) with Fracture Critical Endorsement and Complex Coating Endorsement (P1-Enclosed or P2-Covered).

14.2 Certified Weld Inspector

The Bridge Manufacturer shall employ at least two Certified Weld Inspectors (CWI), with endorsement by AWS QC1. At least one CWI shall be present during the complete fabrication of the bridge. The CWI shall provide written documentation that the bridge has been fabricated in accordance with these specifications and the approved design drawings.

14.3 Documentation

Material Certifications shall be available for review for all materials within the bridge. Traceability of heat numbers is required for all structural steel.

Documentation showing the performance of all critical quality checks shall also be made available for review by the Engineer or Owner.

14.4 Non-Destructive Testing

All welds within the structure, shall be visually inspected for conformance to size, under cut, profile and finish.

All shop splices of main truss members shall be magnetic particle tested.

15.0 DELIVERY AND ERECTION

15.1 Delivery

Delivery shall be made via truck to a location nearest the site which is accessible to normal over-the-road equipment. All trucks delivering bridge materials will need to be unloaded at the time of arrival. If the erection Contractor needs special delivery or delivery is restricted, they shall notify the Bridge Manufacturer prior to bid date. This includes site issues which may prevent over-the-road equipment from accessing the site. Steerable dollies are not used in the cost provided by the Bridge Manufacturer. Determining the length of bridge section which can be delivered is the responsibility of the Contractor and shall be communicated to the Bridge Manufacturer prior to the bid date.

15.2 Installation & Lifting Procedures.

The Bridge Manufacturer will provide standard typical written procedures for lifting and splicing the bridge. All actual means, methods, equipment and sequence of erection used are the responsibility of the Contractor.

16.0 WARRANTY

The Bridge Manufacturer shall warrant, at the time of delivery, that it has conveyed good title to its steel structure, free of liens and encumbrances created by the Bridge Manufacturer, and that its steel structure is free of defects in design, material and workmanship. This warranty shall be valid for a period of one (1) year from the earlier date of delivery or 60 days after final fabrication is complete. Durable tropical hardwood decking and hardwood attachments shall carry a one (1) year warranty against rot, termite damage, or fungal decay. This warranty shall specifically exclude all softwood and decking material such as Treated Southern Yellow Pine, Douglas Fir and Wood thermoplastic composite lumber (e.g. Trex). Paint, galvanizing and other special coatings, if warranted, shall be warranted by the coating manufacturer in accordance with their warranty provisions and are not covered under the Bridge Manufacturer's warranty.

This warranty shall not cover defects in the steel structure caused by abuse, misuse, overloading, accident, improper installation, maintenance, alteration, or any other cause not expressly warranted. This warranty shall not cover damage resulting from or relating to the use of any kind of de-icing material. This warranty shall be void unless owner's records are supplied that show compliance with the minimum guidelines specified in the in the Bridge Manufacturer's inspection and maintenance procedures.

Repair, replacement, or adjustment, in Bridge Manufacturer's sole discretion, shall be the exclusive remedy for any defects under this warranty. This warranty shall exclude liability for any indirect, consequential, or incidental damages.

Update: June 2010

THE FOLLOWING ITEMS ARE SPECIAL PROVISIONS TO
THE CITY OF SAN ANTONIO
STANDARD SPECIFICATIONS FOR CONSTRUCTION
DATED JUNE 2008
Updated for Parks and Recreation - Greenway Trails 2025

1. Item 526 Field Office... 2 Pages

General

1. None

Standard Specifications

1. Delete Item 526 – Field Office (*dated June 2008*) in its entirety and replace with Item 526 – Field Office (*dated June 2010*) shown on the attached document.
2. Delete Item 526 – Field Office (*dated June 2010*) in its entirety and replace with Item 526 – Field Office (*dated June 2025*) shown on the attached document.

ITEM

526 FIELD OFFICE

526.1. DESCRIPTION: *This item shall govern the erection or furnishing of a building to be used by the contractor, project managers, inspectors as a Field Office and a shall serve as inclement weather shelter at the jobsite to protect workers during adverse weather conditions. The total contract amount (including Joint Bid Utilities) is one million dollars or greater.*

526.2. EQUIPMENT:

- A. General.** Furnish facilities after the receipt of the notice to proceed and before beginning physical work on the project. Provide field offices of the type specified near the worksite at a location acceptable to the Consultant, City Representative or Project Manager. The Contractor may make use of permanent buildings or rental space meeting the requirements for field offices instead of portable buildings if approved. Maintain and clean the field office bi-weekly until the City accepts the project or coordinated through the Project Manager. Furnish other equipment as required.
- B. Damage.** Immediately repair or replace the facility if it is damaged in any manner. Payment for repair will be made at no cost to the City.

C. Right-Of-Way. When facilities are allowed in the right of way, remove buildings and other facilities and restore the right of way before project acceptance.

D. Parking and Fencing. Provide 2" compacted gravel parking area (unless an existing compact area is selected), for the use of at least 5 vehicles, including 2 city-owned vehicles. Situate the area near the field office at a location acceptable to the Project Manager. Maintain the parking area until the project is completed and restore the area to a condition acceptable to the Project Manager upon project completion. Enclose the field office and the parking area with a 6-ft. temporary chain-link fence and appropriate gate.

- The use of top-mounted 3-strand barbed wire is optional and permitted, as an added security measure.

E. Field Office. The building shall be a minimum of 10 feet by 16 feet by 8 feet high with not less than three glass windows and one door. Ensure the floor has an impervious floor covering.

Ensure that the field office is weatherproof and electrically wired by certified personnel. Furnish and install adequate outlets, lighting, air conditioning, heating, and ventilation. Furnish appropriate access to the building if deemed necessary by the Project Manager.

Provide a partitioned rest room furnished with rest room supplies, a lavatory and a flush toilet connected to a sewer or septic tank.

- Use of a portable toilet is permitted as a substitute for a flush toilet.

Secured and controlled access to the field office through the use of security measures—such as bars, alarms, or security fencing—is permitted but not required; however, the contractor shall be responsible for any damage, theft, or loss resulting from inadequate security.

Provide 2 tables at least 3 ft. wide and 6 ft. long, 6 chairs or in the quantity acceptable to the Project Manager.

526.3. MEASUREMENT: No measurement will be made under this item.

526.4. PAYMENT: No payment will be made under this item. The Field Office and items listed above are not a pay item and shall remain the property of the contractor after completion of this project.

526.5. BID ITEM:

N/A