ADDENDUM No. 4

Date **November 25, 2013**

City of Austin

Project Name **J. J. Seabrook Stream Restoration, Rain Garden and Urban Trail Project**

C.I.P. No. **5282.055**

This Addendum forms a part of Contract and clarifies, corrects or modifies original Bid Documents, dated **October 7, 2013**. Acknowledge receipt of this addendum in space provided on bid form. Failure to do so may subject bidder to disqualification.

A. Project Manual Revisions:

Reference Section **00020CSP REQUEST FOR PROPOSALS COMPETITIVE SEALED PROPOSALS**

i. Delete **00020CSP REQUEST FOR PROPOSALS COMPETITIVE SEALED PROPOSALS** in its entirety and replace with the attached revised

00020CSP REQUEST FOR PROPOSALS COMPETITIVE SEALED PROPOSALS.

Reference Section **SS-4466 Prefabricated Bridge**

i. Delete **SS-4466 Prefabricated Bridge** in its entirety and replace with the attached revised **SS-4466 Prefabricated Bridge.**

B. Drawing Revisions:

i. Delete **Sheet 57, Sheet 59 and Sheet 60** in their entirety and replace with the attached revised **Sheet 57, Sheet 59 and Sheet 60.**

This addendum consists of 21 page(s)/sheet(s).

KS for Christina Calvery

Approved by OWNER

Approved by ENGINEER/ARCHITECT

STATE OF TEXAS
KEVIN SWEAT
92023
LICENSED
PROFESSIONAL ENGINEER
11/25/2013

END

REQUEST FOR PROPOSALS
COMPETITIVE SEALED PROPOSALS
Section 00020CSP

I. Overview

The City of Austin, hereafter referred to as OWNER, desires to select a general contractor on the basis of Competitive Sealed Proposals. This solicitation complies with applicable City of Austin Policy and Texas Government Code 2267, Subchapter D. OWNER will select the successful Offeror that offers the best value to the City of Austin based on the published evaluation criteria and on its final ranking.

Offeror is cautioned to refer to all other sections of the solicitation documents and/or Addenda for further details. Evaluation criteria are detailed in Section 00100CSP and incorporated hereto.

II. Project Description

OWNER is requesting Competitive Sealed Proposals for furnishing all labor, materials, equipment, supervision and performing all Work required for the following Project:

Project Name:	**J.J. Seabrook Stream Restoration, Rain Garden and Urban Trail Project**
Project Location:	**Pershing Drive from Manor Rd. to MLK Blvd. and J.J. Seabrook Greenbelt**
Solicitation Number:	**CLMB316**
CIP ID #:	**5282.055**

The Estimated Budget is $1,470,000. The Work consists of restoration and stabilization of Tannehill Branch Creek in JJ Seabrook Park, installation of rain gardens, urban trail, habitat structures, pedestrian bridge, storm sewer retrofits, landscape installation and maintenance, and associated appurtenances.

III. Solicitation Documents

Solicitation Documents may be obtained at One Texas Center, 505 Barton Springs Road, Ste. 760, Austin, TX 78704. Copies will be available in CD format at no cost.

At the time Solicitation Documents are obtained, Bidder must provide a working e-mail address so that they will receive any addenda or clarification issued by the Owner.

IV. Submission of Proposal

The Proposal documents and MBE/WBE Compliance Plan (or documentation of Good Faith Efforts) must be submitted in a sealed container marked on the outside with the Offeror's name and address, solicitation number, and due date and time. Proposals (including Compliance Plans) that are not submitted in a sealed container will not be considered. Telegraphic or facsimile Proposals will not be accepted. Proposal may be mailed or delivered (during normal business hours in person or by Federal Express, Express Mail or other delivery service) to:

City of Austin
Contract Management Department
Attn: John Hilbun
105 W. Riverside Dr., Ste 210
Austin, Texas 78704

Austin, Texas 78704

DUE DATE:	**January 17, 2014**
PRIOR TO:	**2:00 PM**

PROPOSALS RECEIVED AFTER THE DATE AND TIME STATED ABOVE WILL NOT BE ACCEPTED FOR CONSIDERATION. The time stamp clock in the Suite 210 Reception Area is the time of record and is verified with www.time.gov, the official U.S. time.

It is the sole responsibility of the Offeror to ensure timely delivery of Proposal. OWNER will not be responsible for failure of service on the part of the U.S. Post Office, courier services, or any other form of delivery service chosen by Offeror. Sealed Proposals must be submitted prior to the times stated above.

An original signature must appear on at least one (1) of the Proposal copies submitted.

In order to be considered for selection, you must submit: **one (1) original and eight (8) copies of the proposal and (1) copy on CD or Flash Drive.**

V. Vendor Registration

All Offerors must be registered to do business with the OWNER prior to submitting a proposal. All Subcontractors must be registered with the OWNER prior to execution of a contract. Prime Contractors are responsible for ensuring that their Subcontractors are registered as a vendor with the City of Austin. Registration can be done through the OWNER's on-line Vendor Registration system. Log onto https://www.ci.austin.tx.us/vss/Advantage and follow the directions.

VI. MBE/WBE Program

All City procurements are subject to the City's Minority-Owned and Women-Owned Business Enterprise Procurement Program found at Chapter 2-9A of the City Code, as amended. The Program provides Minority-Owned and Women-Owned Business Enterprises (MBEs/WBEs) or Disadvantaged Business Enterprises (DBEs) full opportunity to participate in all City contracts. Goals for MBE/WBE or DBE participation are stated for each solicitation. Information on achieving the goals or documenting good faith efforts to achieve the goals are contained in the MBE/WBE Procurement Program Package or DBE Procurement Program Package attached to the solicitation. When goals are established, **Offerors are required to complete and return the MBE/WBE Compliance Plan with the Proposal.** If a Compliance Plan is not submitted prior to the date and time set forth in the solicitation, the Proposal will not be accepted for consideration.

VII. Bid Guaranty

All Proposals shall be accompanied by a bid guaranty in an amount of no less than five percent (5%) of the proposal price. Acceptable bid guaranty will be a bid bond with Power of Attorney attached, issued by a solvent surety authorized under laws of the State of Texas and acceptable to the OWNER. Bid guarantees will be returned to Offeror after contract execution.

VIII. Bonds and Insurance

When performance and/or payment bonds are required, each shall be issued in an amount equal to the Contract Amount as security for the faithful performance and/or payment of all CONTRACTOR obligations under the Contract Documents. All bonds and insurance required by

the Contract Documents shall be obtained from solvent surety or insurance companies that are duly licensed by the State of Texas and authorized to issue bonds or insurance policies for the limits and coverages required by the Contract Documents. The bonds shall be in a form acceptable to OWNER and shall be issued by a surety which complies with the requirements of Texas Insurance Code, Title 12, Chapter 3503.

Minimum insurance requirements are specified in Section 00810CSP, Supplemental General Conditions.

IX. Minimum Wage Compliance

Minimum wage rates have been established and are specified in Section 00830CSP, Wage Rates and Payroll Reporting.

X. Time is of the Essence

Contract Time is of the essence and all Work shall be substantially completed within 270 calendar days after the Notice to Proceed, in accordance with the Proposal Form, Section 00300CSP. Final completion shall be achieved within 30 calendar days after substantial completion. Liquidated damages are $1,490 per calendar day for failure to substantially complete the work and $1,490 per calendar day for failure to achieve final completion within the stipulated 30 calendar days after substantial completion, in accordance with the Proposal Form.

XI. Owner's Rights

OWNER reserves the right to reject any or all Proposals and to waive any minor informality in any Proposal or solicitation procedure (a minor informality is one that does not affect the competitiveness of the Proposal).

XII. Pre-Proposal Conference

A **mandatory** Pre-Proposal Conference will be held on **October 16, 2013 at 10:30 AM at City Hall Bullpen, 301 W. 2nd St., Room 1029, Austin, TX 78701**. Unless otherwise stated, attendance is required of an authorized agent of the Offeror to be qualified to submit a Proposal. An authorized agent is defined as a knowledgeable person who is on the Offeror's payroll at the time of Proposal submission. Offeror must arrive and sign-in within fifteen (15) minutes of the scheduled start time of the meeting, otherwise, the Offeror will not be allowed to submit a Proposal for the project. Offerors should attend the Pre-Proposal Conference to ensure their understanding of OWNER's proposal and contracting requirements, particularly MBE/WBE Procurement Program requirements.

XIII. Authorized Contact Persons

The persons listed below may be contacted for information regarding the Request for Proposals. If the Offeror contacts any other City employee, including Council Members and members of Boards and Commissions, the Offeror may be found in violation of Ordinance No. 20111110-052, dated November 10, 2011, regarding Anti-Lobbying and Procurement. The text of that Ordinance may be viewed at

http://www.cityofaustin.org/edims/document.cfm?id=161145

Title	Name	Phone	Email
PROJECT MANAGER	Christina Calvery	512-974-7094	christina.calvery@austintexas.gov
CONTRACT PROCUREMENT REP.	John Hilbun	512-974-7009	john.hilbun@austintexas.gov

END

1.0 GENERAL

1.1 Scope

These specifications are for a fully engineered clear span bridge of steel construction and shall be regarded as minimum standards for design and construction. These specifications are based on products designed and manufactured by CONTECH Engineered Solutions, LLC Continental Bridge brand, 8301 State Highway 29 North, Alexandria, MN 56308.
Phone: 1-800-328-2047 or (320) 852-7500 Fax: 320-852-7067
E-mail: continental@contechbridge.com

1.2 Qualified Suppliers

Each bidder is required to identify their intended bridge supplier as part of the bid submittal. Qualified suppliers must have at least 5 years experience fabricating these type structures.

Pre-approved Manufacturers:

CONTECH Engineered Solutions, LLC
8301 State Highway 29 North
Alexandria, Minnesota 56308
1-800-328-2047
www.conteches.com
IKhan@conteches.com

ART THURESON, INC
4000 West Walton
Waterford, MI 48329
Phone: 248–623-8599
Fax: 248-623-8766
www.artthuresoninc.com
jon@artthuresoninc.com

Cameron Bridge Works
1051 S MAIN ST,
ELMIRA NY 14904
PH: 607-734-9456
FAX: 607-733-4148
www.cameronbridgeworks.com
katie@cameronbridgeworks.com

Excel Bridge Manufacturing Co.
12001 Shoemaker Avenue
Santa Fe Springs, CA 90670
Phone 800/548-0054
Fax 562/944-4025
www.excelbridge.com
excelbdg@gte.net

Pioneer Bridges
119 40th Street Northeast
Fort Payne, AL 35967
1-866-708-5778 ext. 107
www.pioneerbridges.com
dyates@pioneerbridges.com

2.0 GENERAL FEATURES OF DESIGN

2.1 Span

Bridge span shall be 80'-0" (straight line dimension) and shall be as measured from each end of the bridge structure.

2.2 Width

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

2.3 Bridge System Type

Bridge(s) shall be designed as a Continental Connector Truss H1-SQ) (or equal), that has one diagonal per truss panel and plumb end vertical members. Interior vertical members may be either plumb or perpendicular to the chord faces.

2.3.1 Bridge(s) shall be designed utilizing an H-Section configuration where the floor beams are placed up inside the trusses and attached to the truss verticals.

2.3.2 The bridge manufacturer shall determine the distance from the top of the deck to the top and bottom truss members based upon structural and/or shipping requirements.

2.3.3 The top of the top chord shall not be less than 54 inches above the deck (measured from the high point of the riding surface) on bike path structures.

2.4 Member Components

All members of the vertical trusses (top and bottom chords, verticals, and diagonals) shall be fabricated from square and/or rectangular structural steel tubing. Other structural members and bracing shall be fabricated from structural steel shapes or square and rectangular structural steel tubing.

Unless the floor and fastenings are specifically designed to provide adequate lateral support to the top flange of open shape stringers (w-shapes or channels), a minimum of one stiffener shall be provided in each stringer at every floor beam location.

2.5 Attachments

2.5.1 Safety Rails

Horizontal safety rails shall be placed on the structure up to a minimum height of 4'-06" above the deck surface. Safety rails shall be placed so as to prevent a 4" sphere from passing through the truss. Safety rails shall be placed on the inside or outside of the structure at the bridge fabricator's option. Safety rails placed on the inside of the truss shall have their ends sealed and ground smooth so as to produce no sharp edges.

The safety rail system shall be designed for an infill loading of 200 pounds, applied horizontally at right angles, to a one square foot area at any point in the system.

2.5.3 Toe Plate

The bridge shall be supplied with a steel toe plate mounted to the inside face of both trusses. The toe plate shall be a minimum of 4 inches high. Toe plating will be welded to the truss members at a height adequate to provide a 2" gap between the bottom of the plate and the top of the deck or the top of the bottom chord, whichever is higher. The span of unstiffened flat toe plating (from center to center of supports) shall not exceed 5'-8".

2.5.5 Hand Railing

The bridge will be supplied with a 1-1/2" O.D. galvanized steel pipe handrail mounted on the truss verticals on brackets to provide 1-1/2" knuckle clearance.

The top of the pipe handrail shall be 3'-0" above the top of the deck (measured at the outside edge of the deck).

2.6 Camber

The bridge shall have a vertical camber dimension at midspan equal to 100% of the full dead load deflection plus 1% of the full length of the bridge.

2.7 Elevation Difference

The bridge shall be designed and fabricated to accommodate an elevation difference of 0.5' between abutments.

3.0. ENGINEERING

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

3.1 Design Loads

In considering design and fabrication issues, this structure shall be assumed to be statically loaded. No dynamic analysis shall be required nor shall fabrication issues typically considered for dynamically loaded structures be considered for this bridge. The Fracture Critical requirements have been waived, including article 8.2.3 of the AASHTO LRFD Guide Specification for Design of Pedestrian Bridges, December 2009.

3.1.1 Dead Load

The bridge structure design shall consider its own dead load (superstructure and original decking), as well as the additional loads listed below:

3.1.2 Uniform Live Load

3.1.2.1 Pedestrian Live Load

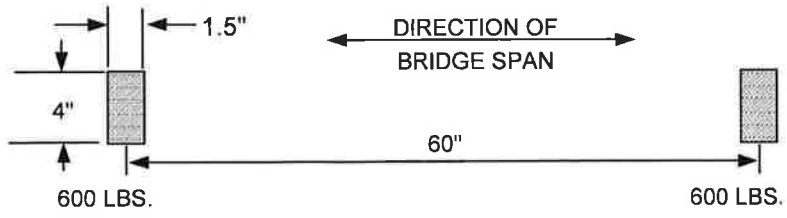
Main Members: Main supporting members, including girders, trusses and arches shall be designed for a pedestrian live load of 90 pounds per square foot of bridge walkway area. The pedestrian live load shall be applied to those areas of the walkway so as to produce maximum stress in the member being designed.

3.1.3 Concentrated Loads

The bridge superstructure, floor system and decking shall be designed for each of the following point load conditions:

3.1.3.1 A concentrated load of 1000 pounds placed on any area 2.5 ft x 2.5 ft square.

3.1.3.2 A 1200 pound two wheel vehicle with a wheelbase and tire print area as shown in the following diagram:



3.1.3.3 An AASHTO Standard H10 vehicle with the appropriate wheelbase, tire track and tire print area as defined by AASHTO. A vehicle impact allowance is not required.

3.1.4 Wind Load

3.1.4.1 Horizontal Forces

The bridge(s) shall be designed for a wind load of 35 pounds per square foot on the full vertical projected area of the bridge as if enclosed. The wind load shall be applied horizontally at right angles to the longitudinal axis of the structure.

The wind loading shall be considered both in the design of the lateral load bracing system and in the design of the truss vertical members, floor beams and their connections.

3.1.4.2 Overturning Forces

The effect of forces tending to overturn structures shall be calculated assuming that the wind direction is at right angles to the longitudinal axis of the structure. In addition, an upward force shall be applied at the windward quarter point of the transverse superstructure width. This force shall be 20 pounds per square foot of deck.

3.1.7 Top Chord/Railing Loads

The top chord, truss verticals, and floor beams shall be designed for lateral wind loads (per section 3.1.4.1) and for any loads required to provide top chord stability as outlined in Section 3.3.6; however, in no case shall the load be less than 50 pounds per lineal foot or a 200 pound point load, whichever produces greater stresses, applied in any direction at any point along the top chord or at the top of the safety system (42" or 54" above deck level), if higher than the top chord.

3.1.9 Load Combinations

The load combinations shall follow AASHTO LRFD "Standard Specifications for Highway Bridges".

It shall be the responsibility of the foundation engineer to determine any additional loads (i.e. earth pressure, stream force on abutments, wind loads other than those applied perpendicular to the long axis of the bridge, etc.) and load combinations required for design of the abutments.

3.2 Design Limitations

3.2.1 Deflection

3.2.1.1 Vertical Deflection

The vertical deflection of the main trusses due to service pedestrian live load shall not exceed 1/360 of the span.

The vertical deflection of cantilever spans of the structure due to service pedestrian live load shall not exceed 1/220 of the cantilever arm length.

The deflection of the floor system members (floor beams and stringers) due to service pedestrian live load shall not exceed 1/360 of their respective spans.

Deflection limits due to occasional vehicular traffic shall not be considered.

3.2.1.2 Horizontal Deflection

The horizontal deflection of the structure due to lateral wind loads shall not exceed 1/360 of the span under a 35 PSF wind load.

3.2.2 Minimum Thickness of Metal

The minimum thickness of all structural steel members shall be 1/4" nominal and be in accordance with the AISC Manual of Steel Constructions' "Standard Mill Practice Guidelines". For ASTM A500 and ASTM A847 tubing, the section properties used for design shall be per the Steel Tube Institute of North America's Hollow Structural Sections "Dimensions and Section Properties".

3.3 Governing Design Codes / References

Structural members shall be designed in accordance with recognized engineering practices and principles as follows:

3.3.1 Structural Steel Allowable Stresses

American Association of State Highway and Transportation Officials (AASHTO).
Allowable Design Stresses shall be in accordance with the "LRFD Guide Specification for the Design of Pedestrian Bridges " latest edition (AASHTO).

3.3.2 Welded Tubular Connections

American National Standards Institute / American Welding Society (ANSI/AWS) and the Canadian Institute of Steel Construction (CISC).

All welded tubular connections shall be checked, when within applicable limits, for the limiting failure modes outlined in the ANSI/AWS D1.1 Structural Welding Code or in accordance with the "Design Guide for Hollow Structural Section Connections" as published by the Canadian Institute of Steel Construction (CISC).

When outside the "validity range" defined in these design guidelines, the following limit states or failure modes must be checked:

* Chord face plastification
* Punching shear (through main member face)
* Material failure
    - Tension failure of the web member
    - Local buckling of a compression web member
* Weld failure
    - Allowable stress based on "effective lengths"
    - "Ultimate" capacity
* Local buckling of a main member face
* Main member failure:
    - Web or sidewall yielding
    - Web or sidewall crippling
    - Web or sidewall buckling
    - Overall shear failure

All tubular joints shall be plain unstiffened joints (made without the use of reinforcing plates) except as follows:

* Floor beams hung beneath the lower chord of the structure may be constructed with or without stiffener (or gusset) plates, as required by design.

* Floor beams which frame directly into the truss verticals (H-Section bridges) may be designed with or without end stiffening plates as required by design.

* Where chords, end floor beams and in high profiles the top end struts weld to the end verticals, the end verticals (or connections) may require stiffening to transfer the forces from these members into the end vertical.

* Truss vertical to chord connections.

NOTE: The effects of fabrication tolerances shall be accounted for in the design of the structure. Special attention shall be given to the actual fit-up gap at welded truss joints.

3.3.4 Wood

American Institute of Timber Construction (AITC), the U.S. Forest Products Laboratory, and the American Forest & Paper Association (AF&PA).

Sawn lumber shall be designed in accordance with the ANSI/AF&PA NDS, "National Design Standard for Wood Construction", as published by the American Forest & Paper Association or the "Timber Construction Manual" as published by the American Institute of Timber Construction (AITC). Design properties for naturally durable hardwoods shall be in accordance with "Tropical Timbers of the World", as published by the U.S. Forest Products Laboratory.

3.3.5 Concrete

American Concrete Institute (ACI)

Reinforced concrete shall be designed in accordance with the "Building Code Requirements for Structural Concrete" (ACI 318).

3.3.6 Top Chord Stability

Structural Stability Research Council (SSRC), formerly Column Research Council.

The top chord shall be considered as a column with elastic lateral supports at the panel points. The critical buckling force of the column, so determined, shall exceed the maximum force from dead load and live load (uniform or vehicular) in any panel of the top chord by not less than 50 percent for parallel chord truss bridges or 100 percent for bowstring bridges. The design approach to prevent top chord buckling shall be as outlined by E.C. Holt's research work in conjunction with the Column Research Council on the stability of the top chord of a half-through truss. See Appendix A for the calculation of the spring constant C and the determination of an appropriate K factor for out-of-plane buckling.

In addition, for the dead load plus vehicle load combination, the spring constant "C" furnished by the transverse "U-Frames" shall not be less than "C" required as defined by:

$$C\ required = \frac{1.46\ P_c}{L}$$

where P_c is the maximum top chord compression due to dead load plus the vehicle load times the appropriate safety

factor (1.5 for parallel chord truss bridges or 2.0 for bowstring bridges) and L is the length in inches of one truss panel or bay.

For uniformly loaded bridges, the vertical truss members, the floor beams and their connections (transverse frames) shall be proportioned to resist a lateral force of not less than 1/100k times the top chord compressive load, but not less than .004 times that top chord load, applied at the top chord panel points of each truss. The top chord load is determined by using the larger top chord axial force in the members on either side of the "U-frame" being analyzed. For end frames, the same concept applies except the transverse force is 1% of the axial load in the end post member.

For bridges with vehicle loads, the lateral force applied at the top chord elevation for design of the transverse frames shall not be less than 1% of the top chord compression due to dead load plus any vehicle loading.

The bending forces in the transverse frames, as determined above, act in conjunction with all forces produced by the actual bridge loads as determined by an appropriate analysis which assumes that the floor beams are "fixed" to the trusses at each end.

NOTE: The effects of three dimensional loading (including "U-frame" requirements) shall be considered in the design of the structure. The "U-frame" forces shall be added to the forces derived from a three dimensional analysis of the bridge.

4.0 MATERIALS

4.1 Steel

4.1.1 Unpainted Weathering Steel

Bridges which are not to be painted shall be fabricated from high strength, low alloy, atmospheric corrosion resistant ASTM A847 cold-formed welded square and rectangular tubing and/or ASTM A588, or ASTM A242, ASTM A606 plate and structural steel shapes (Fy = 50,000 psi). The minimum corrosion index of atmospheric corrosion resistant steel, as determined in accordance with ASTM G101, shall be 6.0.

4.3 Decking

4.3.1 Concrete Deck

The bridge shall be furnished with a stay-in-place galvanized steel form deck suitable for pouring a reinforced concrete slab. The form deck shall be designed to carry the dead load of the wet concrete, weight of the form decking, plus a construction load of 20 PSF uniform load or a 150 pound concentrated load on a 1'-0" wide section of deck. When edge supports are used, deflection is limited to 1/180 of the span or 3/4", whichever is less. Without edge supports, deflection shall be limited to 1/180 of the span or 3/8", whichever is less.

The form deck shall be either smooth or composite. Composite decking shall not be used as reinforcing when designing for vehicular wheel loads. The form deck material shall be supplied in accordance with ASTM A653 and galvanized to a minimum G90 coating weight. The form deck shall be steel deck UF2X-20 gauge.
The deck slab shall be constructed using concrete with a minimum 28-day strength (f_c') of
3,500 PSI and shall be normal weight concrete (145 PCF)

Concrete deck design shall be performed by the bridge manufacturer. Concrete decks shall be designed for concentrated loads as specified in Section 3.1.3. The wheel loads used for deck design shall be distributed per the Structural Engineering Handbook, 4th Ed., by Gaylord, Gaylord and Stallmeyer. The load distribution width is equal to the tire width plus 0.6 times the slab span but in no case will it be greater than the smallest of the following values:

1. 1/2 the deck width,

2. 75% of the wheel track spacing, or
3. 4′ + 0.06S, per AASHTO, where S = slab span in feet

5.0 WELDING

5.1 Welding

Welding and weld procedure qualification tests shall conform to the provisions of ANSI/AWS D1.1 "Structural Welding Code", 1996 Edition. Filler metal shall be in accordance with the applicable AWS Filler Metal Specification (i.e. AWS A 5.28 for the GMAW Process). For exposed, bare, unpainted applications of corrosion resistant steels (i.e. ASTM A588 and A847), the filler metal shall be in accordance with AWS D1.1, Section 3.7.3.

5.2 Welders

Welders shall be properly accredited operators, each of whom shall submit certification of satisfactorily passing AWS standard qualification tests for all positions with unlimited thickness of base metal, have a minimum of 6 months experience in welding tubular structures and have demonstrated the ability to make uniform sound welds of the type required.

6.0 SUBMITTALS

6.1 Submittal Drawings

Schematic drawings and diagrams shall be submitted to the customer for their review after receipt of order. Submittal drawings shall be unique drawings, prepared to illustrate the specific portion of the work to be done. All relative design information such as member sizes, bridge reactions, and general notes shall be clearly specified on the drawings. Drawings shall have cross referenced details and sheet numbers. All drawings shall be signed and sealed by a Professional Engineer who is licensed in accordance with Section 3.0.

6.2 Structural Calculations

Structural calculations for the bridge superstructure shall be submitted by the bridge manufacturer and reviewed by the approving engineer. All calculations shall be signed and sealed by a Professional Engineer who is licensed in accordance with Section 3.0. The calculations shall include all design information necessary to determine the structural adequacy of the bridge. The calculations shall include the following:

* All AASHTO allowable stress checks for axial, bending and shear forces in the critical member of each truss member type (i.e. top chord, bottom chord, floor beam, vertical, etc.).

* Checks for the critical connection failure modes for each truss member type (i.e. vertical, diagonal, floor beam, etc.). Special attention shall be given to all welded tube on tube connections (see section 3.3.2 for design check requirements).

* All bolted splice connections.

* Main truss deflection checks.

* U-Frame stiffness checks (used to determine K factors for out-of-plane buckling of the top chord) for all half through or "pony" truss bridges.

* Deck design.

NOTE: The analysis and design of triangulated truss bridges 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.

6.3 Welder certifications in compliance with AWS standard qualification tests.

6.4 Welding procedures in compliance with Section 5.1.

7.0 FABRICATION

7.1 General Requirements

7.1.1 Drain Holes

When the collection of water inside a structural tube is a possibility, either during construction or during service, the tube shall be provided with a drain hole at its lowest point to let water out.

7.1.2 Welds

Special attention shall be given to developing sufficient weld throats on tubular members. Fillet weld details shall be in accordance with AWS D1.1, Section 3.9 (See AWS Figure 3.2). Unless determined otherwise by testing, the loss factor "Z" for heel welds shall be in accordance with AWS Table 2.8. Fillet welds which run onto the radius of a tube shall be built up to obtain the full throat thickness (See Figure 7.1). The maximum root openings of fillet welds shall not exceed 3/16" in conformance with AWS D1.1, Section 5.22. Weld size or effective throat dimensions shall be increased in accordance with this same section when applicable (i.e. fit-up gaps> 1/16").

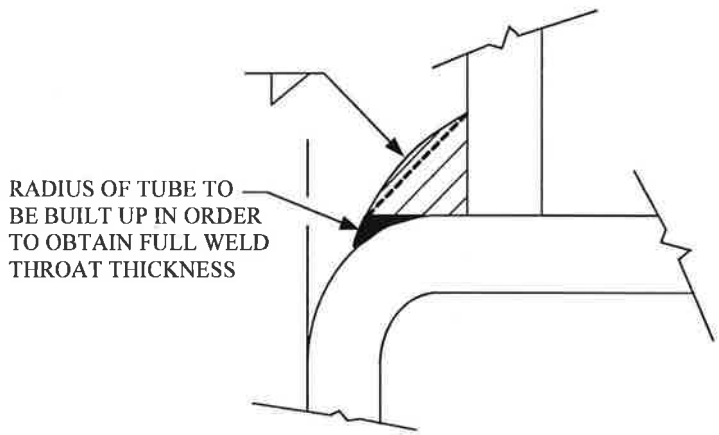


FIGURE 7.1
BUILD UP RADIUS WELD

The fabricator shall have verified that the throat thickness of partial joint penetration groove welds (primarily matched edge welds or the flare-bevel-groove welds on underhung floor beams) shall be obtainable with their fit-up and weld procedures. Matched edge welds shall be "flushed" out when required to obtain the full throat or branch member wall thickness.

For full penetration butt welds of tubular members, the backing material shall be fabricated prior to installation in the tube so as to be continuous around the full tube perimeter, including corners. Backing may be of four types:

* A "box" welded up from four (4) plates.

* Two "channel" sections, bent to fit the inside radius of the tube, welded together with full penetration welds.

* A smaller tube section which slides inside the spliced tube.

* A solid plate cut to fit the inside radius of the tube.

Corners of the "box" backing, made from four plates, shall be welded and ground to match the inside corner radii of the chords. The solid plate option shall require a weep hole either in the chord wall above the "high side" of the plate or in the plate itself. In all types of backing, the minimum fit-up tolerances for backing must be maintained at the corners of the tubes as well as across the "flats".

7.2 Quality Certification

Bridge(s) shall be fabricated by a fabricator who is 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 "Major Steel Bridges" as set forth in the AISC Certification Program with Fracture Critical Endorsement. Quality control shall be in accordance with procedures outlined for AISC certification. For painted structures, the fabricator must hold a "Sophisticated Paint Endorsement" as set forth in the AISC certification program. Furthermore, the bridge(s) shall be fabricated in a facility owned and/or leased by the corporate owner of the manufacturer, and fully dedicated to bridge manufacturing.

8.0 FINISHING

8.1 Blast Cleaning

8.1.1 Bare applications of enhanced corrosion resistant steels.

All Blast Cleaning shall be done in a dedicated OSHA approved indoor facility owned and operated by the bridge fabricator. Blast operations shall use Best Management Practices and exercise environmentally friendly blast media recovery systems.

To aid in providing a uniformly "weathered" appearance, all exposed surfaces of steel shall be blast cleaned in accordance with Steel Structures Painting Council Surface Preparation Specifications No. 7 Brush-Off Blast Cleaning, SSPC-SP7 latest edition.

Exposed surfaces of steel shall be defined as those surfaces seen from the deck and from outside of the structure. Stringers, floor beams, lower brace diagonals and the inside face of the truss below deck and bottom face of the bottom chord shall not be blasted.

9.0 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.

The manufacturer will provide detailed, written instruction in the proper lifting procedures and splicing procedures (if required). The method and sequence of erection shall be the responsibility of others.

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

10.0 BEARINGS

10.1 Bearing Devices

Bridge bearings shall consist of a steel setting or slide plate placed on the abutment or grout pad. The bridge bearing plate which is welded to the bridge structure shall bear on this setting plate. One end of the bridge will be fixed by fully tightening the nuts on the anchor bolts at that end. The opposite end will have finger tight only nuts to allow movement under thermal expansion or contraction.

The bridge bearings shall sit in a recessed pocket on the concrete abutment. Minimum 28-day strength for the abutment concrete shall be 3,000 PSI. The bearing seat shall be a minimum of 16" wide. The step height (from bottom of bearing to top-of-deck) shall be determined by the bridge manufacturer.

Bridges in excess of 100 feet in length or bridges with dead load reactions of 15,000 pounds or more (at each bearing location) shall have teflon on teflon or stainless steel on teflon slide bearings placed between the bridge bearing plate and the setting plate. The top slide plate shall be large enough to cover the lower teflon slide surface at both temperature extremes.

11.0 FOUNDATIONS

Unless specified otherwise, the bridge manufacturer shall determine the number, diameter, minimum grade and finish of all anchor bolts. The anchor bolts shall be designed to resist all horizontal and uplift forces to be transferred by the superstructure to the supporting foundations. Engineering design of the bridge supporting foundations (abutment, pier, bracket and/or footings), including design of anchor bolt embedments, shall be the responsibility of the foundation engineer. The contractor shall provide all materials for (including anchor bolts) and construction of the bridge supporting foundations. The contractor shall install the anchor bolts in accordance with the manufacturer's anchor bolt spacing dimensions.

Information as to bridge support reactions and anchor bolt locations will be furnished by the bridge manufacturer after receipt of order and after the bridge design is complete.

12.0 PAYMENT

Payment shall include all materials and labor, tools and equipment necessary for complete installation of the bridge, complete and in place.

Payment will be made under the following:

Pay Item No. SS4466-A80S14W:	**Prefab Truss Bridge (80' Span, 14' Wide)**	**Each**
Pay Item No. SS4466-D:	**3" Deep X 16 Gauge Galvanized Form Deck**	**Square Feet**

13.0 APPROVAL CHECKLIST

The following checklist will be used in the evaluation of all submittals to assure compliance with the Special Specifications for Prefabricated Bridge. This checklist is considered the minimum acceptable requirements for compliance with these specifications. Any deviations from this checklist shall be considered grounds for rejection of the submittal. Any costs associated with delays caused by the rejection of the submittal, due to non-compliance with this checklist, shall be fully borne by the contractor and bridge supplier.

SUBMITTAL DRAWINGS

Data Required to be Shown:

- ☐ Bridge Elevation
- ☐ Bridge Cross Section
- ☐ All Member Sizes
- ☐ All Vertical Truss Members are Square or Rectangular Tubing
- ☐ Bridge Reactions
- ☐ General Notes Indicating
  - ☐ AISC Stress Conformance
  - ☐ Material Specifications to be Followed
  - ☐ Design Live Load
  - ☐ Design Vehicle Load (If Applicable)
  - ☐ Design Wind Load
  - ☐ Other Specified Design Loads
  - ☐ Welding Process
  - ☐ Blast Cleaning
  - ☐ Paint System to be Used (If Applicable)
- ☐ Paint Color Chart (If Applicable)
- ☐ Detailed Bolted Splices (If Applicable)
- ☐ Bolted Splice Location (If applicable)
- ☐ Signature and Seal of Professional Engineer, licensed in Accordance with Section 3.0

DESIGN CALCULATIONS

Data Required to be Shown:

- ☐ Data Input for 3-D Analysis of Bridge
  - ☐ Joint Coordinates & Member Incidences
  - ☐ Joint and Member Loads
  - ☐ Member Properties
  - ☐ Load Combinations
- ☐ AASHTO Member Stress Checks for Each Member Type
- ☐ Critical Connection Failure Mode Checks For Each Member Type
  - ☐ Chord Face Plastification Checks
  - ☐ Punching Shear Checks
  - ☐ Material Failure Checks (Truss Webs)
  - ☐ Weld Failure Checks (Effective Length)
  - ☐ Weld Failure Checks (Ultimate)
  - ☐ Local Buckling of the Main Member Face Checks
  - ☐ Main Member Yielding Failure Checks
  - ☐ Main Member Crippling Failure Checks
- ☐ Main Member Buckling Failure Checks
- ☐ Main Member Shear Failure Checks
- ☐ All Bolted Splice Checks (if applicable)
- ☐ Main Truss Deflection Checks
- ☐ Decking Material Checks
- ☐ "U-Frame" Stiffness Checks (if applicable)
- ☐ Interior and End Portal Design Checks (if applicable)
- ☐ Determination of Top Chord K Factor Based on "U-Frame" Stiffness (if applicable)
- ☐ Consideration of Individual Member Moments Due to Truss Deflection, Joint Fixity and Joint Eccentricity

FABRICATION SUBMITTALS

Data Required to be Shown:

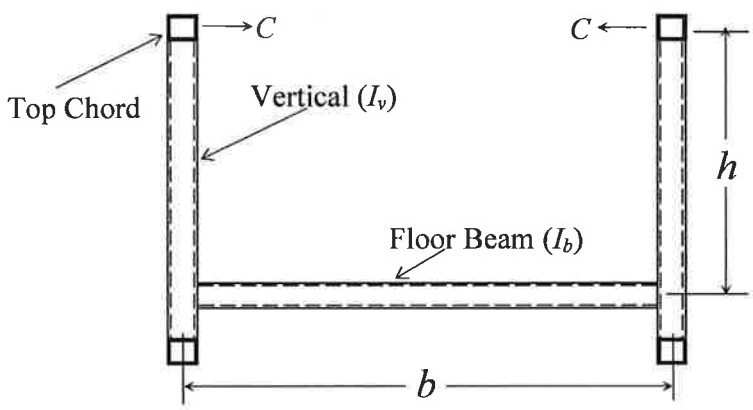
- ☐** Written Installation Instructions
- ☐** Written Splicing Instructions
- ☐** Written Maintenance & Inspection Instructions
- ☐** Welder Certifications
- ☐** Welding Procedures
- ☐ Material Certifications (if applicable)
  - ☐ Structural Steel (if applicable)
  - ☐ Decking (if applicable)
  - ☐ Structural Bolts (if applicable)
  - ☐** Quality Control Section of AISC Certification Manual (if applicable)
  - ☐** Painter Certifications (if applicable)
  - ☐ Weld Testing Reports (if applicable)

** NOTE: These items are required to be submitted along with Submittal Drawings and Design Calculations. Those Fabrication Submittal Items not marked are to be submitted prior to shipment of the bridge.

Appendix A

1/K FOR VARIOUS VALUES OF CL/P_c and n

	n						
1/K	4	6	8	10	12	14	16
1.000	3.686	3.616	3.660	3.714	3.754	3.785	3.809
0.980		3.284	2.944	2.806	2.787	2.771	2.774
0.960		3.000	2.665	2.542	2.456	2.454	2.479
0.950			2.595				
0.940		2.754		2.303	2.252	2.254	2.282
0.920		2.643		2.146	2.094	2.101	2.121
0.900	3.352	2.593	2.263	2.045	1.951	1.968	1.981
0.850		2.460	2.013	1.794	1.709	1.681	1.694
0.800	2.961	2.313	1.889	1.629	1.480	1.456	1.465
0.750		2.147	1.750	1.501	1.344	1.273	1.262
0.700	2.448	1.955	1.595	1.359	1.200	1.111	1.088
0.650		1.739	1.442	1.236	1.087	0.988	0.940
0.600	2.035	1.639	1.338	1.133	0.985	0.878	0.808
0.550		1.517	1.211	1.007	0.860	0.768	0.708
0.500	1.750	1.362	1.047	0.847	0.750	0.668	0.600
0.450		1.158	0.829	0.714	0.624	0.537	0.500
0.400	1.232	0.886	0.627	0.555	0.454	0.428	0.383



" U - Frame"

Where: $C = \dfrac{E}{h^2\,[h/3I_v + b/2I_b]}$

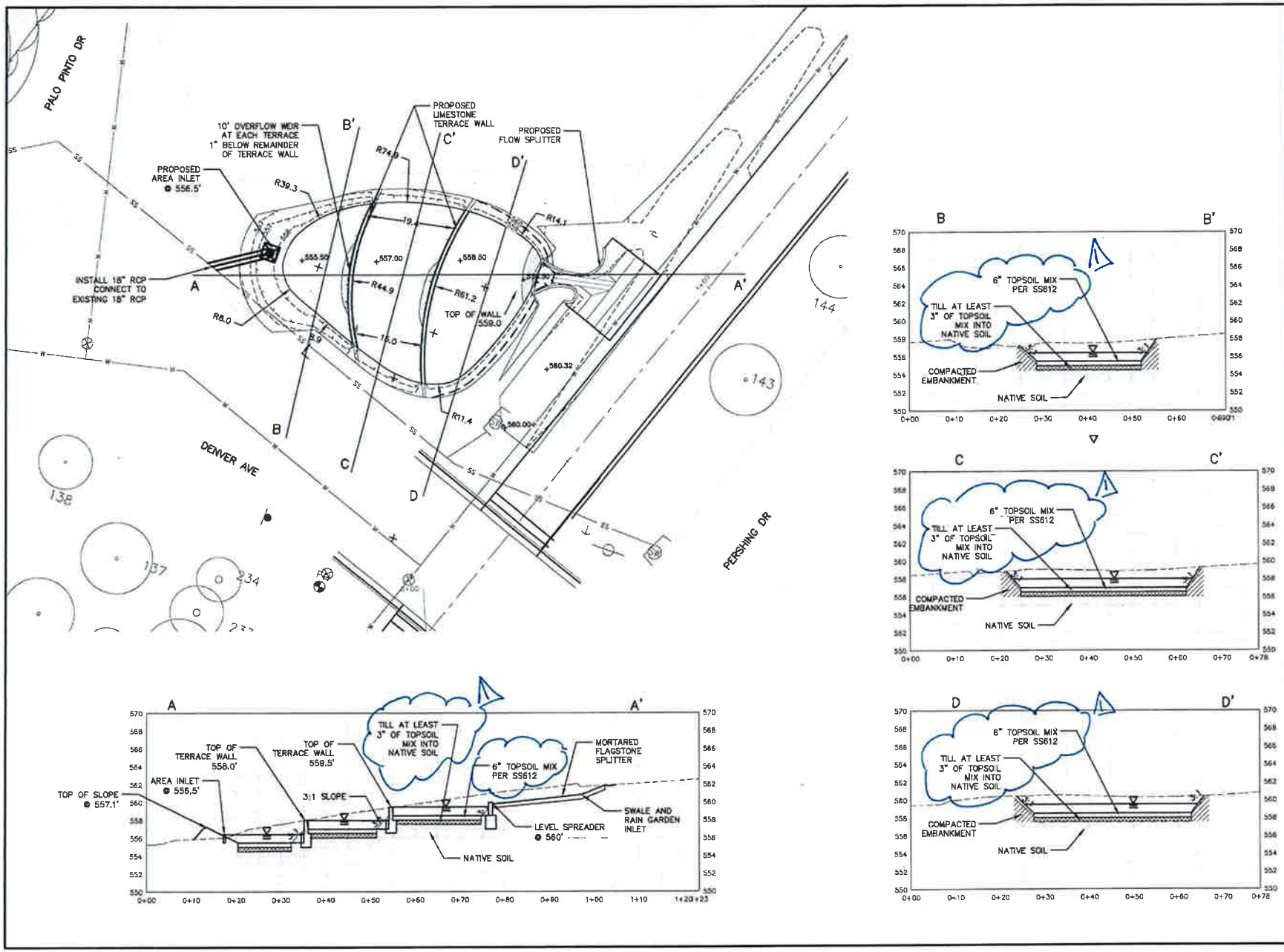
$L = Length\ in\ inches\ of\ one\ truss\ panel$

$P_c = Buckling\ Load\ (= Top\ Chord\ Compression\ x\ F.S.)$

$n = Number\ of\ Panels$

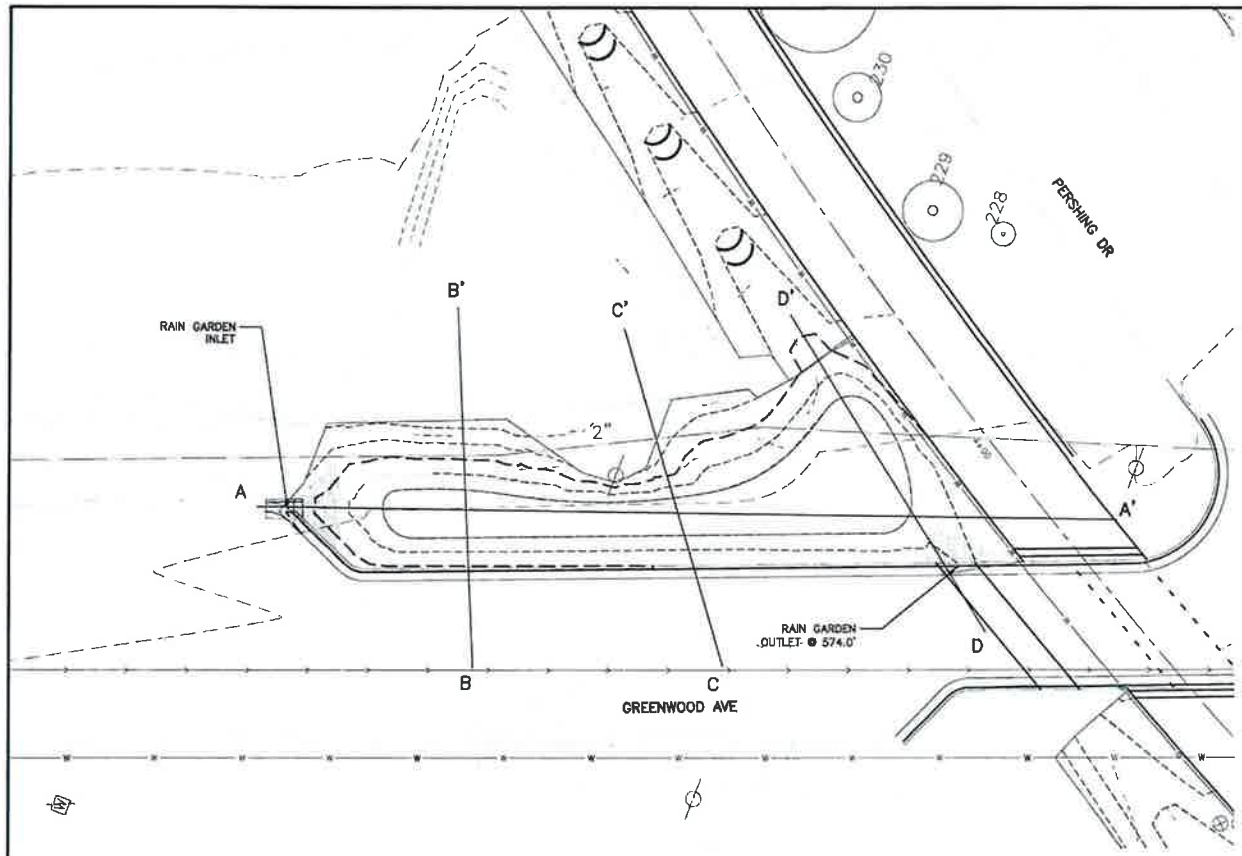
Reference: Galambos, T.V. (1988) "Guide to Stability Design Criteria for Metal Structures", 4th Ed., PP 515-529. Copyright © 1988. Reprinted by permission of John Wiley and Sons, Inc.

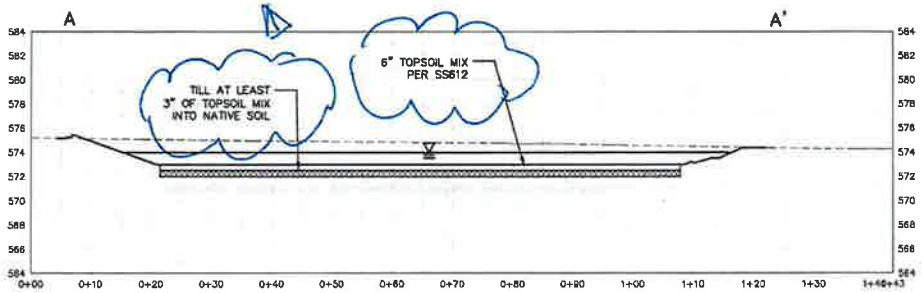
END

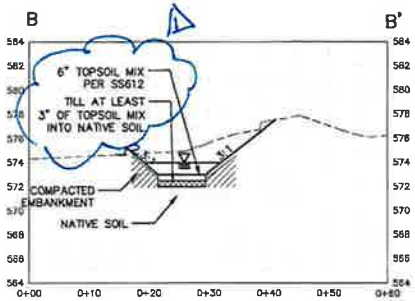

PALO PINTO DR
DENVER AVE
PERSHING DR
PROPOSED LIMESTONE TERRACE WALL
PROPOSED FLOW SPLITTER
10' OVERFLOW WEIR AT EACH TERRACE 1" BELOW REMAINDER OF TERRACE WALL
PROPOSED AREA INLET @ 556.5'
INSTALL 18" RCP CONNECT TO EXISTING 18" RCP
TOP OF WALL 559.0
TILL AT LEAST 3" OF TOPSOIL MIX INTO NATIVE SOIL
6" TOPSOIL MIX PER SS612
COMPACTED EMBANKMENT
NATIVE SOIL
TOP OF TERRACE WALL 558.0'
TOP OF TERRACE WALL 559.5'
AREA INLET @ 556.5'
TOP OF SLOPE @ 557.1'
3:1 SLOPE
MORTARED FLAGSTONE SPLITTER
SWALE AND RAIN GARDEN INLET
LEVEL SPREADER @ 560'
REVISION DESCRIPTION
KEVIN SWEAT 92023
8-Nov-13
THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY KEVIN SWEAT, PE, Lic. #92023
CITY OF AUSTIN, TEXAS
JJ SEABROOK STREAM RESTORATION, RAIN GARDEN AND URBAN TRAIL PROJECT
RAIN GARDEN - DENVER AVENUE
NOTES
NAME
DATE
SURVEY BY
DRAWN BY
DESIGNED BY
CHECKED BY
REVIEWED BY
HORIZONTAL SCALE IN FEET
VERTICAL SCALE IN FEET
PERMIT NUMBER GP 2013-____
SHEET NUMBER 57 OF 88

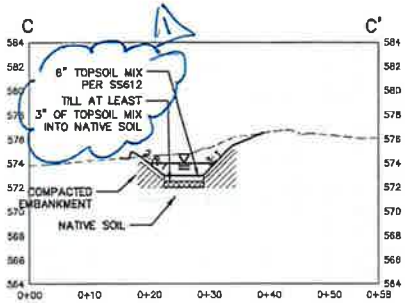
Addendum #4

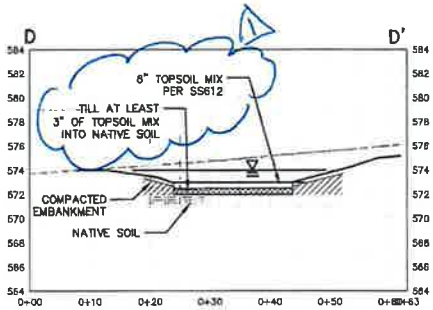
Addendum #4











NO	BY	DATE	REVISION DESCRIPTION

STATE OF TEXAS
KEVIN SWEAT
92023
PROFESSIONAL ENGINEER

8-Nov-13

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CITY OF AUSTIN, TEXAS
DEPARTMENT OF PUBLIC WORKS
ENGINEERING SERVICES DIVISION

JJ SEABROOK STREAM RESTORATION, RAIN GARDEN AND URBAN TRAIL PROJECT

RAIN GARDEN SECTIONS- GREENWOOD AVENUE

ENGINEERING CITY OF AUSTIN FOUNDED 1839 DESIGN

NOTES	NAME	DATE
SURVEY BY		
DRAWN BY		
DESIGNED BY		
CHECKED BY		
REVIEWED BY		

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HORIZONTAL SCALE IN FEET
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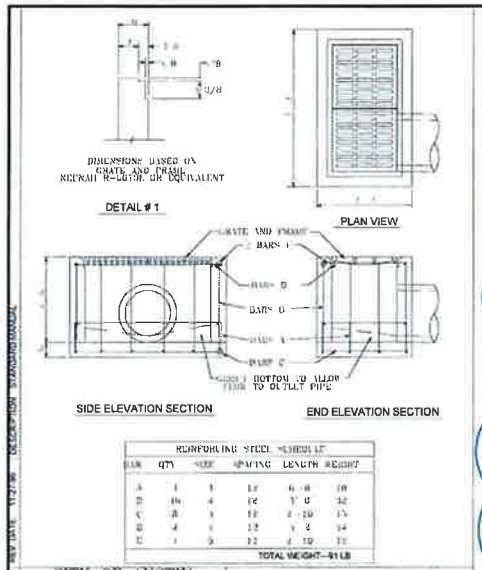
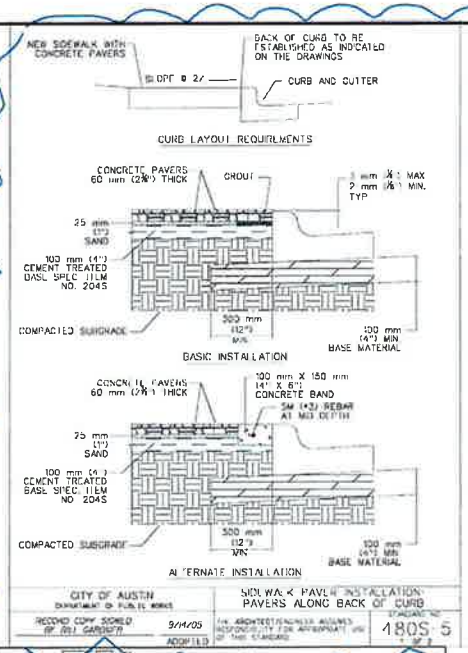
VERTICAL SCALE IN FEET

PERMIT NUMBER
GP 2013-____

SHEET NUMBER 59 OF 88

Addendum #4

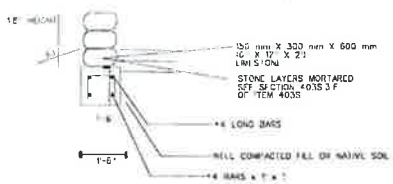




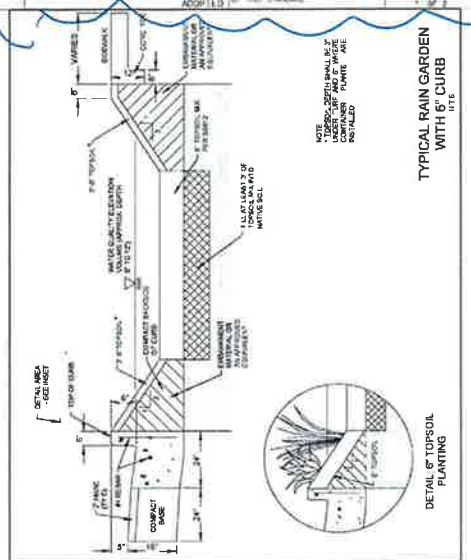
NOTES:

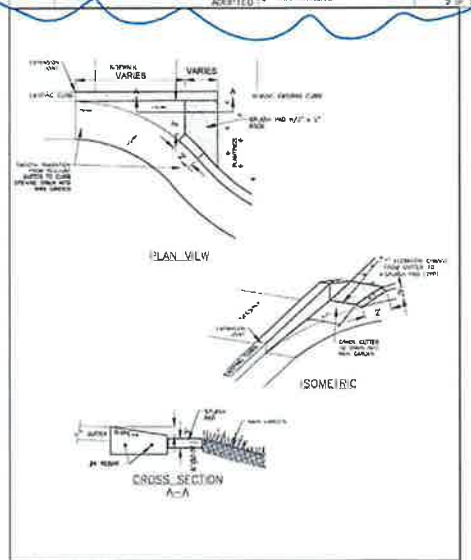
1. THE CONCRETE PAVERS SHALL MEET THE REQUIREMENTS OF STANDARD SPECIFICATION ITEM NO. 480S, "CONCRETE PAVER UNITS"
2. THE GROUT MIX SHALL MEET THE REQUIREMENTS OF SECTION 480S.3.F, "GROUT MIX" OF STANDARD SPECIFICATION ITEM NO. 480S,"CONCRETE PAVER UNITS FOR SIDEWALK RAMPS"
3. THE FIRST TWO ROWS OF CONCRETE PAVERS ADJACENT TO THE BACK OF CURB SHALL BE SET IN A 25 mm (1") THICK GROUT LAYER
4. AS AN ALTERNATE TO SETTING THE FIRST TWO ROWS OF CONCRETE PAVERS IN A GROUT LAYER, A PC CONCRETE BAND (CLASS A, ITEM 403S, "CONCRETE FOR STRUCTURES"), 100 mm (4") DEEP AND 150 mm (6") WIDE, SHALL BE CONSTRUCTED ALONG THE BACK OF CURB

CITY OF AUSTIN
SIDEWALK PAVER INSTALLATION PAVERS ALONG BACK OF CURB
9/14/05
480S-2



MORTARED STACK ROCK WALL





NO.	DATE	BY	REVISION DESCRIPTION
1	11/13/13	KS	DETAIL C

STATE OF TEXAS
KEVIN SWEAT
92023
LICENSED
PROFESSIONAL ENGINEER

8-Nov-13
THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY KEVIN SWEAT, PE, Lic. #92023

CITY OF AUSTIN, TEXAS
CHIEF ENGINEER: MICHAEL GIBBS, P.E.
DIRECTOR: MARTIN GUTIERREZ
DIRECTOR: ROBERT SPILLANE

JJ SEABROOK STREAM RESTORATION, RAIN GARDEN AND URBAN TRAIL PROJECT

RAIN GARDEN DETAILS

ENGINEERING DESIGN

NOTES	NAME	DATE
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SHEET NUMBER 60 OF 88