



**CITY OF BRADY CITY COUNCIL
SPECIAL MEETING AGENDA
JULY 30, 2018 AT 5:00 P.M.**

NOTICE is hereby given of a meeting of the City Council of City of Brady, McCulloch County, State of Texas, to be held at 5:00 p.m. on July 30, 2018, at the City of Brady Municipal Court Building, located at 207 S. Elm Street, Brady, Texas, for the purpose of considering the following items. The City Council of the City of Brady, Texas, reserves the right to meet in closed session on any of the items listed below should the need arise and if applicable pursuant to authorization by Title 5, Chapter 551, of the Texas Government Code.

1. Call to Order, Roll Call and Certification of a Quorum

Tony Groves
Mayor

Jim Griffin
Mayor Pro Tem, Place 5

Rey Garza
Council Member, Place 1

Missi Davis
Council Member, Place 2

Jeffery Sutton
Council Member, Place 3

Jane Huffman
Council Member, Place 4

Kim Lenoir
City Manager

Tina Keys
City Secretary

Sarah Griffin
City Attorney

3. Adjournment

I certify that this is a true and correct copy of the City of Brady City Council Meeting Agenda and that this notice as posted on the designated bulletin board at Brady City Hall, 201 E. Main St., Brady, Texas 76825; a place convenient and readily accessible to the public at all times, and said notice was posted on _____ by _____ and will remain posted continuously for 72 hours prior to the scheduled meeting pursuant to Chapter 551 of the Texas Government Code.

Tina Keys, City Secretary

In compliance with the American with Disabilities Act, the City of Brady will provide for reasonable accommodations for persons attending public meetings at City Facilities. Requests for accommodations or interpretive services must be received at least 48 hours prior to the meeting. Please contact the City Secretary at 325-597-2152 or citysec@bradytx.us.

MISSION

The City of Brady strives to share its history and encourage the development of diverse housing, employment, infrastructure, and opportunity through transparent management and financing for all residents and employees.

From: Erin Corbell [\[mailto:erin@bradytx.com\]](mailto:erin@bradytx.com)
Sent: Thursday, July 26, 2018 8:44 AM
To: Kim Lenoir <klenoir@bradytx.us>
Cc: Taylor Hoffpauri <taylor@bradytx.com>; JT Owens <jt_owens34@hotmail.com>; Tyler Williams <bt-williams@hotmail.com>; Anthony Groves <agroves@bradytx.us>; Missi Davis <missi@centex.net>; Jason Valdez <jvaldez@cnbbrady.com>; Jeremy Ramon <Ramon_J10@yahoo.com>
Subject: Re: Richards Park foot bridge

Good morning, Kim-

Carl Anderson went to assess the bridge and said that he can have it in good working order for \$1500. We'll happily pay for that. We will also have an independent engineer come in to certify the safety of the bridge before the event and present to the city for approval or acceptance.

Also, I spoke to our insurance agent last night. We cannot specifically insure the bridge unless we can prove ownership of it. However, our event insurance covers the entire park for the entire GCO weekend. We have a \$1mil policy with a \$2mil aggregate.

Erin Corbell, IOM
President
Brady/McCulloch County Chamber of Commerce
325.597.3491 office
325.792.8890 cell
www.bradytx.com



BRADY/McCULLOCH
C O U N T Y
C H A M B E R o f C O M M E R C E

From: Dorsey Bustamante
Sent: Monday, June 11, 2018 10:14 AM
To: Peter Lamont <plamont@bradytx.us>; Stephen Morgan <smorgan@bradytx.us>
Cc: Lisa Remini <lremini@bradytx.us>
Subject: TML - Claim on cross-over bridge

Good morning, TML had an engineer come out on Thursday, June 7, 2018 to perform an inspection of the cross-over bridge at Richards Park. I received a call this morning that the bridge structure has been compromised and is considered a total loss, they will be submitting a settlement. Please be aware that this coverage will be under the Flood Coverage and the deductible is \$25,000.00.

They also mentioned that the bridge is unsafe and recommend that we close off the bridge (especially during events when numerous pedestrian would be on the bridge).

Please let me know should you have any questions or require additional information.

Dorsey Bustamante
Purchasing Agent

City of Brady
THE TRUE HEART OF TEXAS

dbustamante@bradytx.us
325.597.2244 ext. 203
325.597.0556 fax
www.bradytx.us

"Beware of little expenses; a small leak will sink a great ship." - Benjamin Franklin

From: Patti Tabor [<mailto:ptabor@tmlirp.org>]
Sent: Monday, June 25, 2018 2:40 PM
To: Dorsey Bustamante <dbustamante@bradytx.us>
Subject: PR79838

Dorsey,

Please find enclosed a copy of the engineers report in regards to the damaged bridge of the flooding on May 14, 2018.

It appears that the damage will fall below the City's \$25k flood deductible, but I do recommend sending the bids to David for review and any costs associated with the engineering and/or bidding of the project.

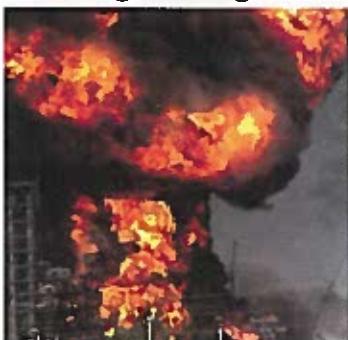
Thanks,

Patti

Patti Tabor
Senior Claims Specialist
Texas Municipal League IRP
800-537-6655 ext. 466
512-491-2466 Direct
512-491-2366 Fax



Engineering



Fire Investigations



Environmental Consulting



Specialty & Consulting



Catastrophe Response

Engineering Investigation

City of Brady
100 Brady Country Club Drive
Brady, TX 76825

Claim Number: PR79838

Prepared For:

Texas Municipal League
1821 Rutherford Lane
Austin, TX 78754
ATTN: David Goldston

EFI Project No. 98430-05426

June 25, 2018

Prepared By:

EFI Global, Inc.
500 Sandau Road, Suite 300
San Antonio, TX 78216

EFI Global 

24 Hours: 888.888.2467
www.efiglobal.com

Engineering, Fire & Environmental Services

500 Sandau Road
Suite 300
San Antonio, TX 78216
T: 210-682-4480
TF: 866-295-0053
F: 210-682-4449
www.efiglobal.com



June 25, 2018

Texas Municipal League
1821 Rutherford Lane
Austin, TX 78754
ATTN: David Goldston

RE: **Engineering Investigation**
City of Brady
100 Brady Country Club Drive
Brady, TX 76825

Date of Loss (DOL): May 14, 2018
Claim No.: PR79838
EFI File No.: 98430-05426

EFI Global, Inc. (EFI) has completed an Engineering Investigation at the Subject Property located at the above-referenced address. Our findings, analysis, and conclusions are included herein.

This report contains a discussion of the information gathered during the assessment and an analysis and conclusions with respect to the condition of the subject site at the time of EFI's assessment. The conclusions contained herein are based on information available to date. EFI reserves the right to consider new information if it becomes available and, if appropriate, adjust our opinions accordingly.

ASSIGNMENT

EFI received an assignment from Mr. David Goldston of Texas Municipal League on May 18, 2018 to conduct an engineering investigation at the subject property.

In response to this request, Mr. Rodolfo E. Serrano, Jr., P.E. (EFI) visited the site on June 6, 2018. Ms. Dorsey Bustamante and Mr. Alfonso Ramos were present and provided access to the subject property.

The scope of this investigation was to inspect the subject bridge for structural damage and to provide repair recommendations.

ENCLOSURES

- Appendix A - Photographs

BACKGROUND INFORMATION

According to Mr. Ramos, the bridge was impacted on the date of loss by debris floating on the surface of Live Oak Creek. Mr. Ramos stated that the bridge is regularly impacted by debris from the Live Oak Creek during times of heavy rain and flooding.

OBSERVATIONS AND DISCUSSION

Observations were photographed to document damage or distress and relevant conditions at the subject property on the date of the site visit. Not all damage or distress that may be present was necessarily observed or photographed; however, the selected photographs provide an indication of their types, severity, and distribution. They may also document unusual or contributing conditions that may exist. Photographs taken to document our findings and observations are appended to this report (Appendix A).

The following observations were noted during EFI's site visit and inspection:

Permanent lateral deflection of the subject bridge consistent with debris impact on the date of loss as well as on previous occasions was observed (Photographs 1 through 4). This condition can affect the structural stability of the bridge.

In addition, the bridge in its current design configuration is too low which allows for debris floating on the creek to impact it rather than go under it.

Based on the condition of the subject bridge and its current design configuration, repairs are not recommended. It is recommended that the bridge be replaced with a taller bridge that allows for debris to pass underneath it during times of

heavy rain and flooding.

All repairs should be performed by qualified and licensed contractors in accordance with all applicable building codes. Contractors remain responsible for details and accuracy, for confirming and correlating all quantities and dimensions, for selecting fabrication processes, for techniques of assembly, and for performing their work in safe manner.

QUALIFICATIONS

The information presented in this report addressed the limited objectives related to the evaluation of the Subject Property. This report only describes the conditions present at the time of our evaluation and is based upon a visual and cursory observation of the subject property. Removal of finish materials, qualitative testing, excavation, or other work not specifically described herein was not conducted. This report is not intended to fully delineate or document every defect or deficiency throughout the subject property. If any additional information is encountered which relates to this evaluation, EFI reserves the right to alter the opinions contained in this report. In some cases, additional studies may be warranted to fully evaluate concerns noted.

The findings noted herein do not constitute a scope of work for repair or offer of repair. Detailed design documents should be prepared to accurately reflect the scope of any repair work and competitive bids be obtained to determine actual repair costs. All means and methods of construction are the responsibility of others and not that of EFI. All existing portions of the building should be properly supported and stabilized during the repair process.

Our services have been performed using that degree of skill and care ordinarily exercised under similar conditions by reputable members of EFI's profession practicing in the same or similar locality at the time of performance. Any verbal statements made before, during, or after the course of the assessment were made as a courtesy only and are not considered a part of this report. This report is furnished as privileged and confidential to the addressee. Release to any other company, concern, or individual is solely the responsibility of the addressee.

Insured: City of Brady
Claim No: PR79838
EFI Global No: 98430-05426
June 25, 2018

CLOSING

EFI appreciates this opportunity to provide you with consulting services in this matter. Please contact us should any questions arise concerning this report, or if we may be of further assistance.

Respectfully submitted,

EFI Global, Inc.¹



Digitally signed by
Rodolfo Serrano
DN: c=US, st=Texas,
l=Humble, o=EFI
Global, Inc.
cn=Rodolfo
Serrano,
email=rodolfo_serr
ano@efiglobal.com
Date: 2018.06.25
11:21:57 -05'00'

Rodolfo E. Serrano, Jr., P.E.
Principal Engineer

Reviewed by:

A handwritten signature in black ink, appearing to read "R. Fierro-Stevens".

Ricardo Fierro-Stevens, P.E.
Structural Engineer

¹ Texas Registered Engineering Firm, F-9168

*Insured: City of Brady
Claim No. PR79838
EFI Global No. 98430-05426
June 25, 2018*

APPENDIX A

PHOTOGRAPHS

Photographs



Photo No. 1: Overview of subject bridge



Photo No. 2: Overview of subject bridge

Photographs

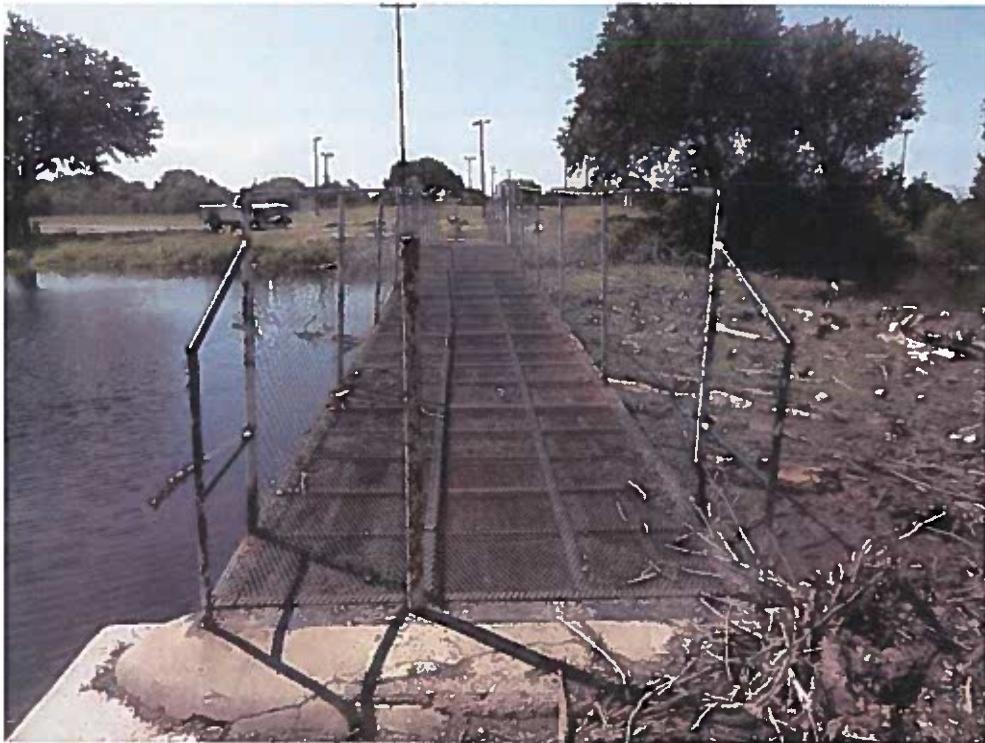


Photo No. 3: Overview of subject bridge



Photo No. 4: Lateral deflection of bridge observed (arrow depicts direction of debris impact)

UNDERWRITING BULLETIN

RECREATIONAL USE FACILITIES

[Click this link for Loss Prevention Skate Park Guidelines](#)

Outdoor recreational activities have increased in popularity in recent years in much of the United States. Although much of this activity has been done on premises owned by private landowners, many governmental units are now constructing, operating, and maintaining facilities on their own premises.

Senate Bill 1224 and House Bill 616, enacted as of September 1, 2005, redefined "recreation" and expanded the application of limited liability for outdoor recreational activities to include all governmental units. The Bills also provide that if a person enters premises owned, operated, or maintained by a governmental unit and engages in recreation on those premises, the governmental unit does not owe to the person a greater degree of care than is owed to a trespasser on the premises.

"Recreation" includes activities (only if the activities take place on premises owned, operated or maintained by a governmental unit) such as hunting, fishing, swimming, boating, camping, picnicking, hiking, pleasure driving, including off-road motorcycling and off-road automobile driving and use of all-terrain vehicles, nature study including bird-watching, cave exploration, waterskiing and other water sports, any other activity associated with enjoying nature or the outdoors, bicycling and mountain biking, disc golf, on-leash and off-leash walking of dogs, or soap box derbies, hockey, in-line hockey, skating, in-line skating, roller-skating, skateboarding, and roller-blading.

We have had a few inquiries from TML Self-Insurance Fund Members about the availability of Fund coverage if they decided to build their own recreational facilities.

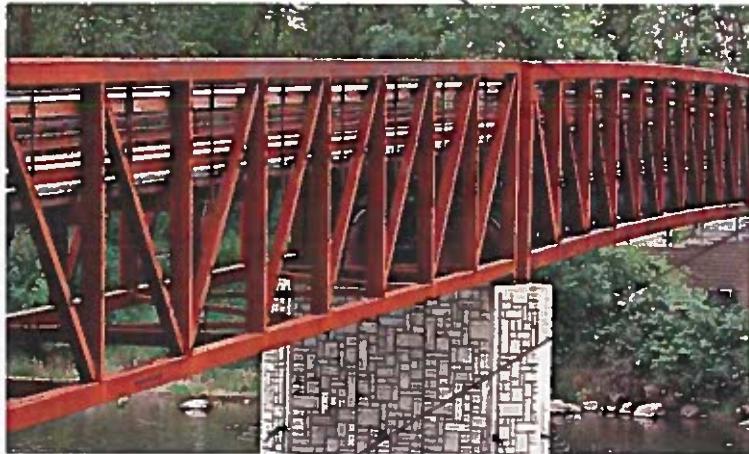
The above-mentioned legislation effectively shields governmental units from liability arising out of activities included in the definition of "recreation" above. The legislation also requires governmental units to post a sign at facilities used for hockey, in-line hockey, skating, in-line skating, roller-skating, skateboarding, and roller-blading with the following specific language: *Warning Texas Law (Chapter 75, Civil Practices and Remedies Code) limits the liability of a governmental unit for damages arising directly from hockey, in-line hockey, skating, in-line skating, roller-skating, skateboarding or roller-blading on premises that the governmental unit owns, operates, or maintains for that purpose.*

The limitation of liability does not reduce the inherent bodily injury hazards of these recreational activities. The Pool's intent is to separately rate facilities that are **constructed by the governmental unit** for certain activities that fall within the definition of "recreation", including skateboard, off-road automobile, off-road motorcycle, and all-terrain vehicle facilities. It is not the intent of the Pool to separately rate premises or land that is simply set aside or made available for such use. The Loss Prevention Representative should be notified so that he or she may survey the facility and make recommendations to help prevent accidents and injuries. However, compliance with recommendations is not a prerequisite for coverage.

General Liability coverage for skateboard parks is rated under code SP99903 Skateboard Facility. For off-road facilities, use code SP99905 Off-Road Recreational Facility. Coverage should not be restricted in terms of limit or deductible.

1-970-356-9600

H-Section Floor Beam



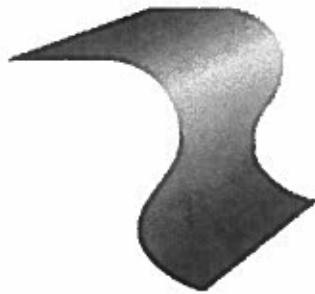
For spans up to 240', the H-Section is often selected for the most efficient superstructure.

This parallel chord truss design has its floor beams welded to vertical members of the side trusses. As with all styles, the H-Section can be created with additional camber for a more graceful look.

Bowstring



With elegant top chords arching up from its base, the Bowstring is the perfect combination of visual appeal and design efficiency. Bowstring is available with spans up to 100' in an Underhung configuration and up to 200' as an H-Section.



BIG R

B R I D G E

INTERACTIVE SPECIFICATION GENERATOR

SPECIAL PROVISIONS FOR PREFABRICATED PEDESTRIAN BRIDGE(S)
Bowstring Top Chord Truss

SPECIAL PURCHASE PROVISIONS FOR PREFABRICATED PEDESTRIAN BRIDGE(S) Bowstring Top Chord Truss

1.0 GENERAL

1.1 Scope

These specifications are for fully engineered bridges of steel construction with bowstring top chord and shall be regarded as minimum standards for selection and award of design and construction. The work included under this item shall consist of design, fabricating, finishing and transporting the steel truss bridge superstructure(s) including bearings. These specifications are based on products designed and manufactured by Big R Bridge.

1.2 Definitions

Owner:	City of Brady.
Manufacturer:	Big R Bridge or approved alternate. Manufacturer & Contractor is to supply sealed engineered drawings including but not limited to, bridge, abutments, connection etc.

1.3 Qualified of 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 experience fabricating these types of structures and shall have an up to date certification by AISC as a Certified Bridge Fabrication - Intermediate (Major) with Fracture Critical Endorsement. All suppliers shall fabricate their product, no brokers are allowed.

Pre-Approved Bridge Manufacturer:

Big R Bridge
P.O. Box 1290
Greeley, CO 80632
1-800-234-0734
E-mail: info@bigrbridge.com

Bridge manufacturers, other than those listed above, may be considered per this RFP requirements by the Owner. The interested bid proposal shall be in accordance with RFP solicitation 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,
- Listing of projects including owner, location, size, year of fabrication, contact person.

The above will be evaluated by the Owner for accuracy and ability to provide a bridge in accordance with these RFP requirements and specifications. Bridge Manufacturers other than those listed above may only be used if the Engineer provides written approval 5 days prior to the bid. The Engineer's ruling shall be final.

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 perform all engineering related task and design. The engineer shall have a minimum of 10 years experience in bridge design and be a currently licensed civil or structural engineer in the State of Texas.

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 material specification, dimension necessary to fabricate and required welding shall be clearly shown on the drawings. Drawings shall have cross 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 and submitted to the Customer for their review after receipt of the order. Calculations shall include complete design, analysis and code checks for the controlling member, 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(s) shall be designed in compliance with the LRFD Guide Specifications for Design of Pedestrian Bridges, 2nd Edition, by AASHTO. Calculations shall be in accordance with this document, and formulas shall reference the appropriate sections.

2.2 Other Reference Codes, Specifications and Standards

AISC, Steel Construction Manual, Latest Edition

AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals, 5th Edition (AASHTO Signs)

American Welding Society, Structural Welding Code, D1.1, Latest Edition

International Building Code (IBC), Latest Edition

ASCE/SEI 7 Minimum Design Loads for Buildings and Other Structures, Latest Edition

National Design Specification for Wood Construction, ANSI NDS-Latest Edition

Tropical Timbers of the World, US Forest Products Laboratory

The LRFD Guide Specifications for 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 Bowstring Top Chord Truss

The vertical trusses shall be designed such that the top and bottom chord members will have a varying height along the length of bridge. The top chord will arch from the intersection of the end vertical and the bottom chord, rising to a peak height at the center of the bridge, and then falling to the intersection of the end vertical and the bottom chord at the other end of the truss. The height of the end vertical will match the specified handrail height. The peak height at the center of the bridge will be as determined by the Bridge Manufacturer, allowing for standard freight and manufacturing limitations. Bridge Manufacturer shall be consulted prior to bid to determine these dimensions. The interior verticals of the trusses shall be perpendicular to the top face of the bottom chord.

End Vertical Type

The end verticals shall be plumb and used as a railing attachment only.

Floor Beam Location

The bridge(s) 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.

Diagonal Style

The vertical truss shall use a double-diagonal configuration, forming an "X" in every bay. The tension diagonal shall be designed for the full shear transfer through the bay. The secondary compression diagonal shall be added for aesthetic reasons only, and may be in the same plane as the tension diagonal, or cross in different planes. The "X" diagonals do not have to be of the same size, however the elevation dimension of the diagonals shall be as similar as possible.

4.0 BRIDGE GEOMETRY

4.1 Span Length

The bridge span length shall be 92'-0" (straight line dimension) and measured from center to center of bearings. The bridge manufacturer shall determine final out-to-out of the bridge span.

4.2 Width

The bridge width shall provide a minimum clearance of 6'-0" between all interior railing elements.

4.3 Truss Height

For Bow String Top Chord System Types, the top of the top chord above the deck dimension at mid-span, shall be as determined by the Bridge Manufacturer allowing for standard shipping, manufacturing and structural criteria.

The top of the end vertical at the bridge ends shall not be less than 42" above the deck (measured from the high point of the deck).

4.4 Lower Steel Clearance

For bridges with floor beams in a H-Section configuration, this dimension shall be the

height of the bottom chord, plus an adequate weld clearance for the vertical to bottom chord and the floor beam to vertical connections, plus the height of the floor beam, plus the maximum thickness of the deck system.

4.5 Truss Bay Spacing

The number of bays and the dimension of the panel points shall be determined by the Bridge Manufacturer. However at no time shall the panel point dimension be a distance which will cause the diagonals to be at an angle shallower than 35-degrees with the bottom chord.

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.

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 Pedestrian Loading (PL)

The bridge structure shall be designed for a uniform pedestrian loading of full occupancy or maximum capacity, a minimum of 90 psf. This loading shall be patterned to produce the maximum load effects including deflection. Consideration of dynamic load allowance is not required with this loading.

5.2 Equestrian Load (EL)

Equestrian traffic is anticipated, the deck system shall be designed for a concentrated or patch load of a minimum 1,000 pounds over a square area measuring 4'ft. on a side.

5.3 Wind Load (WS)

Pedestrian bridges shall be designed for wind loads as specified in *AASHTO Signs*, all applicable sections. The loading shall be applied over the exposed area in front elevation including all enclosures.

5.4 Fatigue Load (FL)

The fatigue loading shall be as specified in Section 11 of *AASHTO Signs*.

5.5 Railing Loads (RL)

Each element of the pedestrian rail system shall be designed to support a uniformly applied load based on full occupancy of pedestrian bridge, a minimum of 50 pounds per lineal foot, both transversely and vertically, acting simultaneously. In addition, each longitudinal element shall be designed to support a concentrated load equivalent to full occupancy, a minimum of 200 pounds, which will act simultaneously with the above uniform loads at any point and in any direction at the top of the longitudinal element.

The posts of the pedestrian rail system shall be designed for a concentrated load applied at either the center of gravity of the upper longitudinal element or 60" above the top of the walkway, whichever is less. This concentrated load shall be equivalent to full occupancy of the pedestrian bridge, a minimum of 200 pounds plus a load factor.

5.6 Fence Loads

All elements of the fence system (support frames, posts, fence fabric, attachments, etc.) shall be designed to support a uniform load per structural requirements and applied normal to the entire surface.

5.7 Other Loads

5.8 Combination of Loads

The load combinations and load factors to be used shall be as per 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.

5.9 Bridge manufacturer shall develop and submit its calculated safety factor of pedestrian bow truss bridge. Safety factor shall be in accordance with rules and requirements for such calculations including federal & state regulations governing bridges & trusses.

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. Analyzing the truss as a pure pinned structure will not be allowed. All loads listed in Section 5 of these specifications shall be applied to the model and analyzed appropriately.

6.2 Lateral Frame Design

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

For bridges without any overhead members (Half-Through Trusses), the vertical truss members, the floor beams 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, creating a cantilever moment, which is then added to the forces obtained from the three-dimensional model.

The top chord shall be analyzed as a column with elastic lateral supports at the panel points, taking into account all moments due to in-plane and out-of-plane bending, along with moments due to eccentricities of the members.

The U-Frame Stiffness of the verticals and floor beams shall be as determined in the AASHTO Guide Specification applicable to pedestrian type pre-engineered bridge

products.

The floor beams shall always 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. All other members shall be analyzed as fixed-end connections.

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.

7.0 MATERIALS OF CONSTRUCTION

7.1 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 structural class steel shapes.

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

7.2 Deck Material

The bridge deck shall be a wood thermoplastic composite lumber (WTCL). Nominal plank size shall be 2x6. Acceptable trade name products are Trex, Timber Tech, or Tamko Evergrain. Maximum support spacing shall be 16" when no vehicular traffic is allowed access to the bridge. Deck planks shall be secured utilizing 5/16" torx head self-drilling self-tapping screws. Each plank shall have two screws at each end and one screw at each interior supporting member. Deck planks shall be placed tight together with no gaps.

7.3 Fasteners

Structural bolts used to field splice, or connect; all main members shall be ASTM A325, in

accordance with the *Specification for Structural Joints using ASTM A325 or A490 Bolts*. 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 rub rail shall be ASTM A307 or SAE J429 Grade 2.

Self-drilling fasteners for attachment of the form decking shall be #14 x 1" Zinc Plated Hex Washer Head Tek Screws.

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

7.4 Rub Rail Timber

Rub Rail timber planks shall be Ipe wood (*Tabebuia spp. -lapacho group*)???, all heartwood (no sapwood), clear (no knots), straight grained, with no worm holes, surfaced 4 sides (S4S) and eased at four edges, and be air dried to no more than 20% moisture content prior to installation. Planks shall be untreated, except ends of planks shall be sealed with "Anchorseal" as manufactured by Mobil CER-M or an equal aqueous wax log sealer.

8.0 FINISH

8.1 Blast Cleaning

All surfaces of structural steel shall be blast cleaned in accordance with the Steel Structures Painting Council (SSPC), Surface Preparation Specification No. 6, latest edition, (SSPC-SP6), Commercial Blast.

8.2 Paint

Painted structures require special fabrication details to ensure that all exposed surfaces receive the proper surface preparation and correct amount of paint. When overlapping steel surfaces occur, a space of 1.5" or greater must be maintained. If this space cannot be maintained, then steel spacers shall be inserted to eliminate the space. All overlapping steel surfaces with a space less than 1.5" shall be seal welded all around to prevent access by water. Caulking of overlapping surfaces shall not be allowed.

Two-coat system shall be a primer coat of Recoatable Epoxy Primer by Sherwin Williams, 4.0-6.0 mils DFT, color gray, and a finish coat of Acrolon 218 HS Acrylic Polyurethane by Sherwin Williams, 3.0-6.0 mils DFT, color to be selected by Owner.

9.0 ATTACHMENTS

9.1 Safety Rails

Safety rails shall be placed on the inside of the structure, spaced so as to prevent a 4" sphere from passing through the side truss for the full height of the side truss, or 54", whichever is less. Rails shall be welded directly to the truss verticals whenever possible. When safety rails are placed on the inside of the structure, the ends of any longitudinal rails near the end of the bridge shall be mitered at a 45-degree angle, capped, and ground smooth. No solid plate covering all rails as a unit will be allowed.

Safety rails shall be placed longitudinally.

Longitudinal safety rails for painted or metalized steel bridges shall be ASTM A500 or A847 HSS $1\frac{1}{2}$ x $1\frac{1}{2}$ x $3/16$ for vertical spacing less than 12'-0". Ends of the tubes shall be capped, welded and ground smooth. The rails shall be seal welded to the truss verticals. If the vertical spacing exceeds 12'-0" then mid-bay supports will be required.

9.2 Fencing

Chain link fencing shall be installed. Fencing wire shall be galvanized steel with a minimum thickness of 9-gage. Fencing shall be knuckled-knuckled both top and bottom. Fencing shall be in continuous runs as detailed on the Bridge Manufacturer's drawings, from end to end of shipped section. End attachment of the fencing shall follow industry standards using tension bars and tension bands, attached to a steel frame which is part of the bridge. Along the length of the bridge, the fencing shall be attached to a steel frame utilizing aluminum tie wires at a maximum spacing of 2'-0" on center. Longitudinal framing shall be placed such that the fencing does not span more than 5'-0".

Fencing shall be installed as follows:

Both side trusses, on the outside of the bridge, to a height of 4'-0".

Fencing Mesh Size shall be:

2 - Inch

All hardware, tension bands, tie wires and mesh shall have the following finish:

Galvanized

9.3 Toe Plate

Steel toe plates for a painted steel bridge shall consist of ASTM A588 $1/4$ " x 6" plate material a HSS4x2x3/16 tube, and shall be welded all around to the truss verticals. If the vertical spacing exceeds 5'-0", a mid-bay support shall be utilized for the $1/4$ " x 6" plate. For spans greater than 5'-0" with no mid-bay support, but less than 12'-0", the toe plate should be an HSS4x2x3/16 tube (ends capped) welded all around directly to the truss verticals. The bottom of the toe plate shall be placed 2" above the finished height of the deck. All seams of the toe plate shall be fully welded to give the appearance of a continuous member (welding should be located at a support member).

9.4 Rub Rail – Wood

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 nominal 5/4x6 Ipe hardwood unless the center to center spacing of truss verticals exceeds 6'-0" at which time a mid-bay support shall be used. For spans exceeding 6'-0" without a mid-bay support, but less than 8'-0", the Rub Rails shall be nominal 2x6 Ipe hardwood. Nominal 2x6 Ipe Hardwood shall require mid-bay supports for spans exceeding 8'-0" but less than 12'-0". Rub rails shall be supplied S4S. All exposed surfaces shall be smooth with no exposed sharp edges. Rub Rails shall be attached flush tight to each truss verticals. Attachment shall be made using two $1/4$ " diameter zinc plated carriage bolts with lock nuts. Attachment shall be to a structural angle welded directly to the side of the vertical. Where a seam occurs between two adjacent pieces of Rub Rail, two structural angles shall be used, one on each side of the truss vertical. Slotted holes in the structural angles shall be used to provide thermal

differential movement between the rub rail and the steel truss.

9.5 Pipe Handrail

A steel pipe handrail shall be installed on each side of the bridge, at a height of *Feet.-Inches* from the top of the deck to the top of the pipe handrail. The pipe shall be ASTM A53, Grade B, Schedule 40 pipe. The pipe shall be attached to handrail brackets which are then attached to the truss verticals. 1 1/4" diameter pipe shall be used unless the center to center spacing of the truss verticals exceeds 6'-0". For vertical spacing larger than this, 1 1/2" diameter pipe shall be used. The ends of the pipe shall be capped with either a welded plate or a push-in cap. Pipe handrail shall be placed so as to provide a minimum 1 1/2" knuckle clearance from any surface.

The finish of the pipe handrail shall be:

Painted steel (color to be chosen by the Owner)

9.6 Expansion Joint

If the gap between the end of the bridge deck and the back wall of the foundation system is 1" or less, then no expansion joint cover is required. If the gap is greater than 1", then the joint shall be covered with a 1/4" thick plate which attaches to the bridge and extends over the gap and onto the top of the foundation system back wall. This plate shall have its edges beveled at a 45-degree angle to minimize the potential trip hazard.

10.0 Bearings

10.1 Steel on Steel

Expansion and fixed bearings shall be a steel on steel Slide Plate. Size shall be per loads and anticipated movements determined by the bridge manufacturer. Both expansion and fixed bearings shall have slotted holes for ease of installation. Fixed bearings shall have the nuts of the anchor rods tight, whereas the expansion bearings shall have the nuts of the anchor rods finger tight.

10.2 Design Temperature Range

The Design Temperature Range will be site specific and will be determined from the Tables in AASHTO Section 3.12.2.2 Temperature Range.

10.3 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 of 4000 pounds per square inch. The cost of the leveling, shimming and non-shrink grout shall be the responsibility of the Contractor.

10.4 Anchor Rods

Bridge Manufacturer shall design the diameter and grade of anchor rods, based on the shear and tensile strength of the anchor rod 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 contract plans. All anchor rods shall be galvanized. The foundation engineer shall determine if the anchor rods shall be cast-in-place, drilled/epoxy, or expansion anchors.

11.0 FABRICATION

11.1 Welding

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

11.2 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 by AISC.

11.3 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. No grinding of this weld shall not be permitted, and will be grounds for rejection of the bridge upon delivery.

11.4 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 all faces of the member are bolted. This is to provide equal force distribution around the perimeter of the member. Bolting in only two faces of an HSS is not allowed. Bolted splices shall be designed and fabricated such that the head of the bolt is the only item exposed. No through-bolting of the member is allowed.

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.

Tightening of the bolts shall be by Turn-of-the-Nut Method. No washers will be required or furnished by the Bridge Manufacturer.

12.0 QUALITY CONTROL

12.1 AISC Certification

The bridge shall be fabricated in a shop owned by the Bridge Manufacturer. This facility shall have up to date certification by AISC as a Certified Bridge Fabrication - Intermediate (Major) with Fracture Critical Endorsement.

12.2 Certified Weld Inspector

The bridge manufacturer shall employ a Certified Weld Inspector (CWI), with endorsement by AWS QC1. This 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.

12.3 Documentation

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

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

12.4 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.

13.0 DELIVERY AND ERECTION

13.1 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 he 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.

13.2 Installation & Lifting Procedures

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

13.3 Abutments

Abutment design, engineering and installation shall be provided by the bridge manufacturer or contractor.

14.0 WARRANTY

The Bridge Manufacturer shall warrant their steel structure(s) to be free of design, material, and workmanship defects for a period of ten years from the earlier of the date of delivery or from 60 days after final fabrication. Naturally durable hardwood decking and hardwood attachments shall carry a one-year warranty against rot, termite damage, or fungal decay from the earlier of the date of delivery or from 60 days after installation on the structure. Other types of wood are excluded under this warranty. This warranty shall not cover defects in the bridge caused by abuse, misuse, overloading, accident, improper maintenance, alteration, or any other cause not the result of defective materials or workmanship. This warranty shall be void unless Owner's records can be supplied which shall indicate compliance with the minimum guidelines specified in the inspection and maintenance procedures. Paint, galvanizing and other special coatings shall be warranted by the coating manufacturer and is not covered by the Bridge Manufacturer. Repair or replacement shall be the exclusive remedy for defects under this warranty. The Bridge Manufacturer shall not be liable for any consequential or incidental damages for breach of any express or implied warranty on their structures.