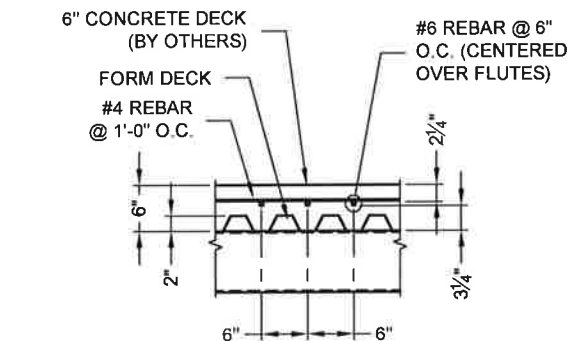


GENERAL NOTES

1. DESIGN PROCEDURE IS IN ACCORDANCE WITH "LRFD BRIDGE DESIGN SPECIFICATIONS" 6TH EDITION & "GUIDE SPECIFICATIONS FOR DESIGN OF PEDESTRIAN BRIDGES" BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) 2009.
2. BRIDGE MEMBERS ARE FABRICATED FROM HIGH STRENGTH, LOW ALLOY, ENHANCED ATMOSPHERIC CORROSION RESISTANT ASTM A847 COLD-FORMED WELDED SQUARE AND RECTANGULAR TUBING, AND ASTM A588, ASTM A606, OR ASTM A709-50W PLATE AND STRUCTURAL SHAPES (Fy=50,000 PSI).
3. CONCRETE DECK: GALVANIZED FORM DECK SUPPLIED BY CONTECH. CONCRETE, REINFORCING AND EXPANSION MATERIAL SUPPLIED BY OTHERS. SEE CONCRETE DECK SHEET.
4. THE GAS METAL ARC WELDING PROCESS OR FLUX CORED ARC WELDING PROCESS WILL BE USED. WELDING TO BE IN ACCORDANCE WITH AWS D1.1.
5. ALL TOP AND BOTTOM CHORD SHOP SPLICES TO BE COMPLETE PENETRATION TYPE WELDS. WELD BETWEEN TOP CHORD AND END VERTICAL SHALL BE AS DETAILED.
6. UNLESS OTHERWISE NOTED, WELDED CONNECTIONS SHALL BE FILLET WELDS (OR HAVE THE EFFECTIVE THROAT OF A FILLET WELD) OF A SIZE EQUAL TO THE THICKNESS OF THE LIGHTEST GAGE MEMBER IN THE CONNECTION. WELDS SHALL BE APPLIED AS FOLLOWS:
- A. BOTH ENDS OF VERTICALS, DIAGONALS, AND FLOOR BEAMS SHALL BE WELDED ALL AROUND.
  - B. BRACE DIAGONALS WILL BE WELDED ALL AROUND.
  - C. MISCELLANEOUS NON-STRUCTURAL MEMBERS WILL BE STITCH WELDED TO THEIR SUPPORTING MEMBERS.
7. BRIDGE DESIGN WAS ONLY BASED ON COMBINATIONS OF THE FOLLOWING LOADS WHICH WILL PRODUCE MAXIMUM CRITICAL MEMBER STRESSES.
- A. 90 PSF UNIFORM LIVE LOADING ON THE FULL DECK AREA OR ONE 20,000 LB VEHICLE LOAD. THE LOAD SHALL BE DISTRIBUTED AS A FOUR-WHEEL VEHICLE WITH 80% OF THE LOAD ON THE REAR WHEELS. THE WHEEL TRACK WIDTH OF THE VEHICLE SHALL BE 6'-0" AND THE WHEEL BASE SHALL BE 14'-0". THE VEHICLE SHALL BE POSITIONED SO AS TO PRODUCE THE MAXIMUM STRESSES IN EACH MEMBER, INCLUDING DECKING.
  - B. 35 PSF WIND LOAD ON THE FULL HEIGHT OF THE BRIDGE, AS IF ENCLOSED.
  - C. 20 PSF UPWARD FORCE APPLIED AT THE WINDWARD QUARTER POINT OF THE TRANSVERSE BRIDGE WIDTH (AASHTO 3.8.2).
8. CLEANING: ALL EXPOSED SURFACES OF STEEL SHALL BE CLEANED IN ACCORDANCE WITH STEEL STRUCTURES PAINTING COUNCIL SURFACES PREPARATION SPECIFICATIONS NO. 7 BRUSH-OFF BLAST CLEANING, SSPC-SP-7-LATEST EDITION.
9. MINIMUM MATERIAL THICKNESS OF 1/4" ON ALL STRUCTURAL MEMBERS.



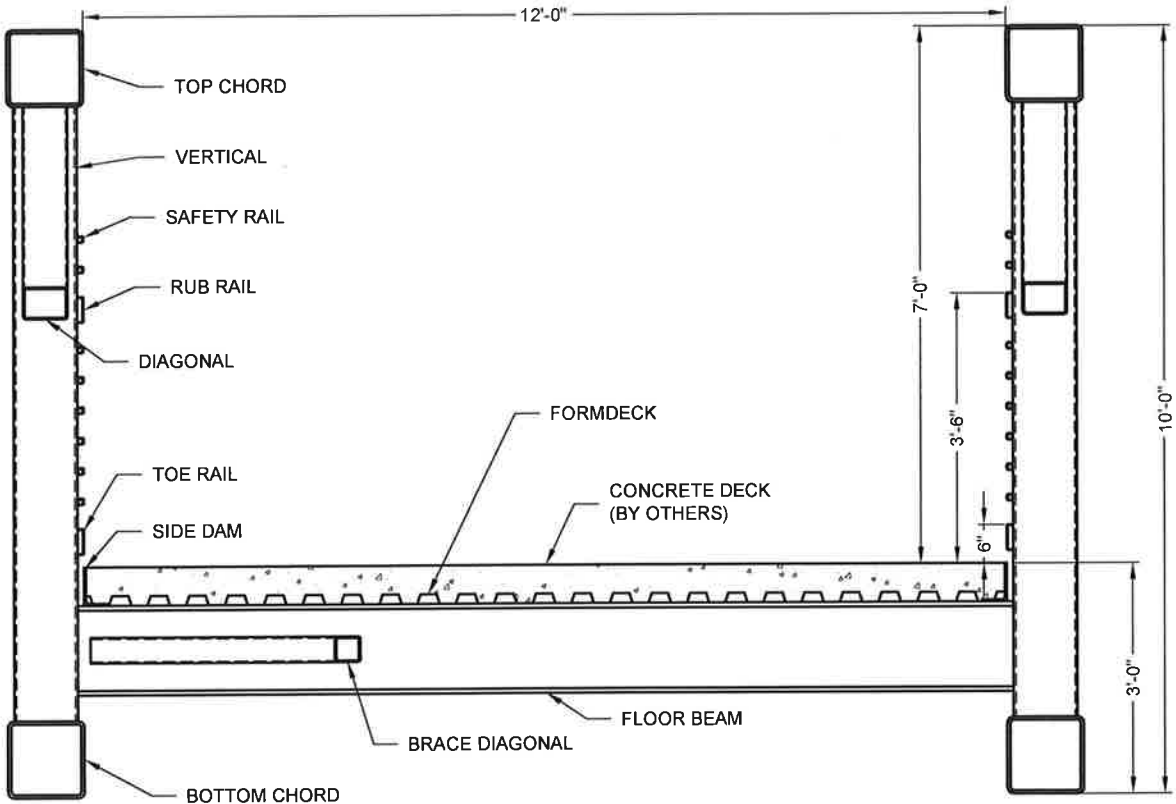
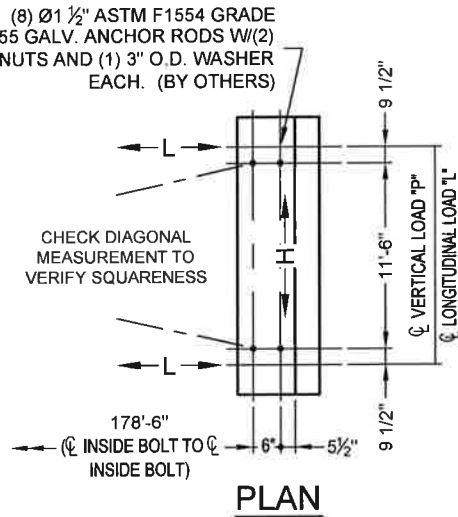
2  
1 TYP SLAB REINFORCEMENT DETAIL

COMBINE REACTIONS AS PER LOCAL OR GOVERNING BUILDING CODES AS REQUIRED

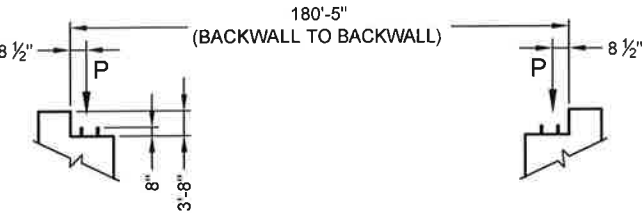
BRIDGE REACTIONS		+ DOWNWARD LOAD - UPWARD LOAD	
	P (LBS)	H (LBS)	L (LBS)
DEAD LOAD ②	66,800		
UNIFORM LIVE LOAD	48,600		
VEHICLE LOAD	10,000		
WIND UPLIFT 20 PSF		-16,900 -6,300	
WIND	±16,600	31,500	
THERMAL ②			10,020

"P" - VERTICAL LOAD EACH BASE PLATE (4 PER BRIDGE)  
"H" - HORIZONTAL LOAD EACH FOOTING (2 PER BRIDGE)  
"L" - LONGITUDINAL LOAD EACH BASE PLATE (4 PER BRIDGE)

- ① BRIDGE LIFTING WEIGHT: 135,500 LBS
- ② BRIDGE FINAL WEIGHT: 267,200 LBS
- ① DOES NOT INCLUDE WEIGHT OF CONCRETE DECK
  - ② INCLUDES WEIGHT OF CONCRETE DECK



1  
1 BRIDGE SECTION



ANCHOR BOLT ELEVATION

**SAMPLE FABRICATION DRAWING ONLY**

**Pedestrian Bridge over Bushkill Creek**

**Lehman Township, PA**

CONTECH  
FABRICATION  
DRAWING



180'-0" X 12'-0"  
AASHTO EXPRESS  
PEDESTRIAN BRIDGE  
STANDARD CONCRETE DECK

**CONTECH**  
ENGINEERED SOLUTIONS LLC  
www.ContechES.com  
8301 State Highway 29 North, Alexandria, MN 56308  
800-328-2047 320-452-7500 320-452-7067 FAX

DATE: 11/6/2015

DESIGNED: XXX	DRAWN: XXX
CHECKED: XXX	APPROVED: XXX
PROJECT No. XXXXXX	SEQUENCE No. XX
SHEET: 1	OF 1



21 S. Valley Forge Road, Unit 304  
Lansdale, PA 19002  
215-498-3249  
William.Gray@ContechES.com

January 27, 2022

William Collins  
SIMONE COLLINS LANDSCAPE ARCHITECTURE  
119 E. Lafayette Street  
Norristown, PA 19401

RE: McDade Trail Connector Bridge

The engineers' estimate for the trail bridge spanning the Bushkill Creek, Smithfield Township, Monroe County, PA, using the **Continental Express® Bridge System**, is as follows:

- **1 only- 180' span x 12' wide**, Continental Express®, Connector Style Truss
- One diagonal per panel, square end vertical, bearings at equal elevations
- Fabricated from ASTM 709, Grade 50 Weathering steel
- Factory Installed SIP forms for CIP concrete deck
- Factory Installed Toe Plate and hardwood rub rail
- CIP deck design
- AASHTO LRFD Bridge Design Standards, supplemented by PENNDOT Group 3 pedestrian bridge standards
- 90 psf uniform live load, 35 psf uniform wind load; 20,000 pound vehicle load
- The bridge will be delivered in three pieces and weigh approximately 135,500 pounds assembled
- **Estimated Price, Delivered:**  
**Smithfield Township, Monroe County PA \$457,100.00, plus sales tax**

Estimated prices are valid for 90 days. This is an estimate based on the information available to us at the present time. This estimate is subject to change at any time and is not to be construed as an offer or contractual obligation between the parties.

<sup>1</sup>The following is not included:

- Soil testing, design, excavation and construction of bridge foundations.
- All construction surveying, including field measurement and verification of abutments
- Anchor bolts, unloading and erection of the bridge.

Thank you for your interest in CONTECH Engineered Solutions. If you have any questions, would like to consider another option or elect to use the CONTINENTAL System, please contact us 215-498-3249.

Sincerely,

A handwritten signature in blue ink that reads "William G. Gray".

William G. Gray  
Bridge Consultant

# SPECIAL SPECIFICATIONS FOR PREFABRICATED BRIDGE

## 1.0 GENERAL

### 1.1 Scope

These specifications are for a fully engineered clear span bridge(s) 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 AASHTO Continental Series.

### 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 10 years of experience fabricating these type structures.

Pre-approved Manufacturers:  
Contech Engineered Solutions  
21 S. Valley forge road, Unit 304  
Lansdale, PA 19446  
Contact: Bill Gray, 215-498-3249  
[wgray@conteches.com](mailto:wgray@conteches.com)

Suppliers other than those listed above may be used provided the engineer or owner's agent evaluates the proposed supplier and approves the supplier 5 days prior to bid.

The contractor must provide the following documentation, for any proposed supplier who is not pre-approved. The supplier must be PennDOT Bulletin 15 approved and be submitted at least 10 days prior to bid:

1. Product Literature
2. All documentation to insure the proposed substitution will be in compliance with these specifications. This shall include:
  - Representative design calculations
  - Representative drawings
  - Splicing and erection procedures
  - Warranty information
  - Inspection and Maintenance procedures
  - AISC Shop Certification
  - AWS Certified Fabricator Certification
  - Welder Qualifications
  - Evidence of 2 Certified Weld Inspectors (CWI's) on staff
3. Proposed suppliers must have at least ten (10) years of experience designing and fabricating these type of structures and a minimum of ten (10) successful bridge projects, of similar construction, each of which has been in service at least seven (7) years. List the location, bridge size, owner, and a contact for reference for each project.

The engineer will evaluate and verify the accuracy of the submittal prior to bid. If the engineer determines that the qualifying criteria have not been met, the contractor's proposed supplier shall be rejected. The engineer's ruling shall be final.

4. The Manufacturer's representative is to be in attendance at the project pre-bid and/or pre-construction meeting.

## **SPECIAL SPECIFICATIONS FOR PREFABRICATED BRIDGE**

### **2.0 GENERAL FEATURES OF DESIGN**

#### **2.1 Span**

Bridge span shall be 180'-0" (straight line dimension) shall be as measured from each end of the bridge structure (out to out dimension).

#### **2.2 Width**

Bridge width shall be 12'-0" clear and shall be as measured from the inside face of the elements comprising the safety system or truss structural members (chords and verticals)

#### **2.3 Bridge System Type**

Bridge(s) shall be designed as a Connector® (Half-Thru Pratt truss) (or equal), that has one diagonal per truss panel and plumb end vertical members. Interior vertical members shall be 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 system**

Safety rails will consist only of horizontal steel tubes. Horizontal tube safety rails shall be placed on the structure up to a minimum-height of 3'-6" above the deck surface. Steel tubes shall be placed so as to prevent a 4" sphere from passing through the truss up to 3'-6" and an 8" sphere from 3'-6" to 4'-6" above deck surface. Safety rails shall be placed on the inside of the structure. Safety rails placed on the inside of the truss, flush with interior verticals and 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.

##### **2.5.2 Rub Rails**

The bridge will be supplied with a 1"x 5-1/2" (actual size) naturally durable hardwood Ipe (Tabebuia Spp Lapacho Group) rubrail. Rubrail shall be partially air dried to a moisture content of 15% to 20%, shall be supplied S4S (surfaced four sides), E4E (eased four edges), with the

## **SPECIAL SPECIFICATIONS FOR PREFABRICATED BRIDGE**

edges eased to a radius of 1/8". Measured at 30% moisture content, the width and thickness shall not vary from specified dimensions by more than  $\pm 0.04$  inches. Ends of each piece shall be sealed with "Anchorseal" Mobil CER-M or an equal aqueous wax log sealer.

Rubrails shall be attached flush to the inside face of the bridge truss verticals and fastened with two carriage bolts at each support location. The span of the rubrail from centerline to centerline of support shall not exceed 6'-6".

The top of the rubrail shall be x'-xx" above the top of the deck (measured at the outside edge of the deck).

### **2.5.3 Toe Rail**

The bridge shall be supplied with a steel channel or plate toe rail with radiused edges mounted to the inside face of both trusses. The toe rail shall be a minimum of 4 inches high. Toe rail shall be welded to the truss members at a height adequate to provide a 2" gap between the bottom of the rail and the top of the deck.

## **2.6 Camber**

The bridge shall have a vertical camber dimension at mid-span equal to 100% of the full dead load deflection of the full length of the bridge.

### **2.7 Elevation Difference**

The bridge abutments shall be designed and constructed to meet the top of deck elevations provided in the bid plans.

## **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 Licensed Professional Engineer is to hold a current P.E. or S.E. license (where required) in the state where the bridge will be erected.

### **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 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 factored load in the

## **SPECIAL SPECIFICATIONS FOR PREFABRICATED BRIDGE**

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:

A four wheeled vehicle with the appropriate wheelbase, tire track and tire print area shall be applied. The vehicle load shall be designed for an 10,000 pound vehicle load.

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 minimum wind load of 35 pounds per square foot on the full vertical projected area of the bridge as if enclosed. Wind load shall be considered in accordance with AASHTO Signs and Luminares, but in no case will the wind load be taken as less than 35 pounds per square foot. 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.

### **3.1.5 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.

### **3.1.6 Load Combinations**

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

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**

## SPECIAL SPECIFICATIONS FOR PREFABRICATED BRIDGE

### 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 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 design wind load.

### 3.2.2 Vibration

Vibration of the structure shall not cause discomfort or concern to users. Except as specified herein, the fundamental frequency in a vertical mode without live load shall be greater than 3.0 hertz. In the lateral direction, the fundamental frequency of the bridge shall be greater than 1.3 hertz. If the bridge cannot satisfy these limitations in the vertical direction, the bridge may be proportioned to satisfy the following criteria:

$$f \geq 2.86 \ln \left( \frac{180}{W} \right)$$

Where:

$f$  = the fundamental frequency in the vertical direction (Hz)

$W$  = the weight of the supported structure, including only dead load (kips)

From bridge design and fabrication experience, bridges with spans between 90 and 110 feet with concrete decks have exhibited vibration problems. To address this issue, the previous equation is limited and a fundamental frequency of at least 2.6 hertz must be met in the vertical direction when the bridge has a span in the 90 to 110 feet range and a concrete deck.

### 3.2.3 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 Construction's "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

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

### 3.3.2 Welded Tubular Connections



## SPECIAL SPECIFICATIONS FOR PREFABRICATED BRIDGE

American Association of State Highway and Transportation Officials / American Welding Society (AASHTO/AWS) and the American Institute of Steel Construction (AISC).

All welded tubular connections shall be checked, when within applicable limits, for the limiting failure modes outlined in AASHTO or in accordance with the "Manual of Steel Construction: LRFD; (Load Resistance Factor Design)" as published by the American Institute of Steel Construction (AISC).

### 3.3.3 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.

### 3.3.4 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



## SPECIAL SPECIFICATIONS FOR PREFABRICATED BRIDGE

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 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 ( $F_y = 50,000$  psi). The minimum corrosion index of atmospheric corrosion resistant steel, as determined in accordance with ASTM G101, shall be 6.0.

#### 4.2 Decking

##### 4.2.1 Treated Fir Decking

Wood decking shall be Select Structural Fir planks (Minimum  $F_b = 1,450$  psi). Decking to be treated to AWP standards. Preservative utilized shall be Alkaline Copper Quaternary (ACQ). Decking shall be treated to a total absorption of 0.40 pounds per cubic foot of wood or to refusal.

##### 4.2.2 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 form decking, plus a construction load of 20 psf 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 concentrated deck loads (wheel loads). The decking shall be galvanized in accordance with ASTM A525 G60.

The deck slab shall be constructed using normal weight concrete (145 pcf) with a minimum 28-day strength ( $f'_c$ ) of 3,500 psi.

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 by Gaylord and Gaylord. 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.  $\frac{1}{2}$  the deck width
2. 75% of the wheel track spacing, or
3.  $4' + 0.06S$ , per AASHTO, where  $S$  = slab span in feet

## **SPECIAL SPECIFICATIONS FOR PREFABRICATED BRIDGE**

### **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”, latest edition. Filler metal shall be in accordance with the applicable AWS Filler Metal Specification. 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.

#### **5.2 Welders**

Welders shall be properly certified, 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 LRFD 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.
- \* 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) .
- \* 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.**

## **SPECIAL SPECIFICATIONS FOR PREFABRICATED BRIDGE**

### **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 3.9.2. Unless determined otherwise by testing, the loss factor “Z” for heel welds shall be in accordance with AWS Table 2.9. Fillet welds which run onto the radius of a tube shall be built up to obtain the full throat thickness. 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”).

#### **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 Intermediate “Major Steel Bridges” as set forth in the AISC Certification Program with Fracture Critical Endorsement. Bridge fabricator shall also be currently certified by the American Welding Society (AWS) as an AWS Certified Fabricator. Quality control shall be in accordance with procedures outlined for AISC certification.

#### **7.3 Weld Testing**

All weld testing shall be done by a person qualified in accordance with ASNT SNT-TC-1A. All full penetration welds in the chords are to be ultrasonically tested in accordance with AWS specifications. All fillet and partial penetration groove welds shall be 100 percent visually inspected with 10 percent also being magnetic particle tested in accordance with AWS specifications. A written testing report shall be submitted upon completion.

### **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. 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 need not be blasted.

### **9.0 DELIVERY AND ERECTION**

## **SPECIAL SPECIFICATIONS FOR PREFABRICATED BRIDGE**

### **9.1 Delivery**

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.

### **9.2 Installation**

The manufacturer will provide an on-site representative for the assembly and installation of the bridge. The manufacturer shall provide detailed, written instruction in the proper lifting procedures and splicing procedures. The method and sequence of erection shall be the responsibility of others.

### **9.3 Splicing**

Chord splices shall have loose splice plates that are inserted into the tubular chord members. The splice plates shall have a splice nut retention device consisting of a capture plate(s) with hexagonal holes held in place by either an angle on each side of the capture plate(s) or C channel(s). Tack welding of splice nuts to splice plates is not acceptable unless an approved Weld Procedure Specification (WPS) can be provided. The sections are then bolted together by bolting through the wall of the tube, nut capture assembly and nut.

### **9.4 Maintenance**

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 and a fabric reinforced elastomeric pad with Teflon on top of the setting plate. The bridge bearing plate which is welded to the bridge structure shall have a stainless steel plate welded to bottom side acting as a slide surface and shall bear on bearing pad and setting plate. One end of the bridge will be fixed and will have fully tightened nuts on the anchor bolts. The expansion end will have finger tight only nuts to allow movement under thermal expansion or contraction. Both ends of bridge shall have slotted holes to facilitate installation tolerance.

### **10.2 Elastomeric Bearings**

Bridge shall be supplied with a fabric reinforced elastomeric pad. Minimum 28-day strength for the abutment concrete shall be a minimum 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 shall have stainless steel on teflon slide bearings placed between the bridge bearing plate and the fabric reinforced elastomeric pad. The top slide plate shall be large enough to cover the lower teflon slide surface at both temperature extremes.

## **11.0 COVER PLATES**

Bridges in excess of 100 feet will be provided with two ASTM A588 or ASTM A242 or ASTM A606 cover plates (one on each end of bridge). Cover plates shall be and must extend past the gap between the foundation backwall and the end of the bridge.

## SPECIAL SPECIFICATIONS FOR PREFABRICATED BRIDGE

### 12.0 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 embedment length, 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.

### 13.0 PAYMENT

A partial payment or "deposit" for the prefabricated bridge shall be made upon order and storage as required by the terms of the manufacturer.

### 14.0 WARRANTY

The bridge manufacturer shall warrant their steel structure(s) are free of design, material and workmanship defects for a period of ten years from the date of delivery.

This warranty shall not cover defects in the bridge caused by abuse, misuse, overloading, accident, improper installation, maintenance, alteration or any other cause not the result of defective materials or workmanship. This warranty does not cover damage resulting from or relating to the use of any kind of de-icing material. This warranty shall be void unless owner's records can be supplied which shall indicate compliance with the minimum guidelines specified in the inspection and maintenance procedures.

Repair, replacement or adjustment, at the sole discretion of the bridge manufacturer, 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 structure.

Any claim under this warranty shall be made promptly and directly to CONTECH Engineered Solutions, LLC who shall have the option, at its sole discretion, to repair, replace or adjust any covered defect without charge to the original purchaser.

SELLER MAKES NO OTHER WARRANTY WHATSOEVER, EXPRESS OR IMPLIED. ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND ALL IMPLIED WARRANTIES OF FITNESS FOR ANY PARTICULAR PURPOSE ARE DISCLAIMED BY SELLER AND EXCLUDED FROM THIS CONTRACT.

REV: 2/1/16

## SPECIAL SPECIFICATIONS FOR PREFABRICATED BRIDGE

### 15.0 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:*

- |   |  |
|---|--|
| <input type="checkbox"/> Bridge Elevation   | <input type="checkbox"/> Weld Failure Checks (Ultimate)  |
| <input type="checkbox"/> Bridge Cross Section   | <input type="checkbox"/> Local Buckling of the Main Member Face Checks   |
| <input type="checkbox"/> All Member Sizes   | <input type="checkbox"/> Main Member Yielding Failure Checks   |
| <input type="checkbox"/> All Vertical Truss Members are Square or Rectangular Tubing                          | <input type="checkbox"/> Main Member Crippling Failure Checks  |
| <input type="checkbox"/> Bridge Reactions   | <input type="checkbox"/> Main Member Buckling Failure Checks   |
| <input type="checkbox"/> General Notes Indicating   | <input type="checkbox"/> Main Member Shear Failure Checks  |
| <input type="checkbox"/> <input type="checkbox"/> AASHTO LRFD Conformance                                     | <input type="checkbox"/> All Bolted Splice Checks (if applicable)  |
| <input type="checkbox"/> <input type="checkbox"/> Material Specifications to be Followed                      | <input type="checkbox"/> Main Truss Deflection Checks  |
| <input type="checkbox"/> <input type="checkbox"/> Design Live Load  | <input type="checkbox"/> Decking Material Checks   |
| <input type="checkbox"/> <input type="checkbox"/> Design Vehicle Load (If Applicable)                         | <input type="checkbox"/> "U-Frame" Stiffness Checks (if applicable)  |
| <input type="checkbox"/> <input type="checkbox"/> Design Wind Load  | <input type="checkbox"/> Interior and End Portal Design Checks (if applicable)   |
| <input type="checkbox"/> <input type="checkbox"/> Other Specified Design Loads                                | <input type="checkbox"/> Determination of Top Chord K Factor Based on "U-Frame" Stiffness (if applicable)                        |
| <input type="checkbox"/> <input type="checkbox"/> Welding Process   | <input type="checkbox"/> Consideration of Individual Member Moments Due to Truss Deflection, Joint Fixity and Joint Eccentricity |
| <input type="checkbox"/> <input type="checkbox"/> Blast Cleaning  |  |
| <input type="checkbox"/> Detailed Bolted Splices (If Applicable)  |  |
| <input type="checkbox"/> Bolted Splice Location (If applicable)   |  |
| <input type="checkbox"/> 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 LRFD 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)

#### FABRICATION SUBMITTALS

*Data Required to be Shown:*

- ☐ \*\* Written Installation Instructions
- ☐ \*\* Written Splicing Instructions
- ☐ \*\* Written Maintenance & Inspection Instructions
- ☐ \*\* Welder Certifications
- ☐ \*\* Welding Procedures
- ☐ Material Certifications
  - ☐ Structural Steel
  - ☐ Decking (if applicable)
  - ☐ Structural Bolts (if applicable)
  - ☐ Weld Testing Reports

**\*\* 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.

**SPECIAL SPECIFICATIONS FOR PREFABRICATED BRIDGE**

**Appendix A – Bridge Supplier Substitutions**

**SUBSTITUTION REQUEST FORM**

**PROJECT #:** \_\_\_\_\_

**PROJECT:** \_\_\_\_\_  
\_\_\_\_\_

**CONTRACTOR:** (Name) \_\_\_\_\_  
(Address) \_\_\_\_\_  
(Address) \_\_\_\_\_

**SPECIFICATION SECTION NUMBER AND PARAGRAPH:** \_\_\_\_\_

**DRAWING AND DETAILS AFFECTED:** \_\_\_\_\_

**PROPOSED SUBSTITUTION:** \_\_\_\_\_

Manufacturer: \_\_\_\_\_

Product (model, pattern, etc.): \_\_\_\_\_

**WHY IS SUBSTITUTION BEING SUBMITTED?** (Select 1 of the following):

- ☐ Pre-Bid Substitution (Prior Approval) Bid Date
- ☐ Specified product is not available. Explain
- ☐ Cost saving to Owner. Indicate comparative cost analysis.
- ☐ Other. Explain.

**EFFECTS OF PROPOSED SUBSTITUTION** (Answer the following questions and attach explanations.)

Does substitution affect dimensions indicated on Drawings?  
(NO) (YES, explain)

Does substitution affect Work of other Sections?  
(NO) (YES, explain)

Does substitution require modifications to design, change to Drawings, or revisions to specifications to be incorporated into the Project?  
(NO) (YES, explain)

Attach list of at least 3 projects where proposed substitution has been used within past 12 months include name, address, and telephone number of Owner and Architect/Engineer.



**SPECIAL SPECIFICATIONS FOR PREFABRICATED BRIDGE**

**CONTRACTOR'S/BIDDERS REPRESENTATION**

Undersigned accepts responsibility for the coordination of proposed substitution and accepts all additional costs from the incorporation of proposed substitution into the Project per Section 012500.

**SUBMITTED BY:**

**FOR ENGINEER.S USE:**

**CONTRACTOR**

*Company Name and Address*

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**ACCEPTED [ ]**

**NOT ACCEPTED [ ]**

**NO ACTION REQUIRED [ ]**

**SUBCONTRACTOR'S  
SIGNATURE & DATE:**

---

---

**SUBMISSION:**

**INCOMPLETE [ ]**

**TOO LATE [ ]**

**CONTRACTOR'S  
SIGNATURE & DATE:**

---

---

**REVIEWED BY/DATE:**

---

---

December 30, 2002

431-02-09

Enhancement & Rails to Trails  
Pedestrian Structures and Bridges on Shared Use Trails  
Signature Authority & Review Responsibility

**District Engineers/Administrator**

/s/ Michael M. Ryan, P.E.

/s/ Richard J. Peltz

Michael M. Ryan, P.E.  
Deputy Secretary for  
Highway Administration

Richard J. Peltz  
Deputy Secretary for  
Local and Area Transportation

The Department's Design Manual Part 4 Structures. (DM-4) supplements the AASHTO Bridge Design Specifications with the intent of providing further design guidance based on research and experience in Pennsylvania. In some cases the specifications are more conservative than the AASHTO Bridge Specifications. Local municipalities have expressed the desire to follow AASHTO specifications and retain approval authority on projects where the Department's only involvement in the project is funding.

The following provides the policy for the design and review and approval of enhancement and rails to trails pedestrian structures, involving both new construction and rehabilitation. Strike-Off-Letter 431-95-16 is superceded by this letter. Reviewers are still reminded to closely review critical areas such as the applicable material specifications, deflections, design loads, member dimensions, fabrication details, connections, and special provisions for erection and construction. If a proprietary product does not meet the criteria, it must be submitted and evaluated through the Department's Product Evaluation Process. Pedestrian and shared use trail structures may be produced only by Bulletin 15 approved fabricators meeting the requirements listed herein. The Department will provide full time in-plant quality assurance inspection during fabrication.

All pedestrian and shared use trail structures may be categorized in one of three groups as follows:

- Group I - Structures located on or over Department right-of-way
- Group II - Structures not located on or over Department right-of-way but crossing a public roadway (roadway owned by another local or state agency)

Group III - Structures not on or crossing any public roadway (i.e.: structures in parks or crossing railroads)

GROUP I - Structures located on or over Department right-of-way

All pedestrian and shared use trail structures located on or over Department final right-of-way shall conform to the DM-4 policies, procedures, and specifications, including appropriate design submissions. Certification acceptance (Stewardship and Oversight Agreement) procedures shall be followed. In all cases the designer shall stamp and seal the structure plans as per DM-4 PP1.6.3.1, and the Bridge Engineer shall review and approve the plans "For Structural Adequacy Only". Publication 408 specifications shall be used for construction and materials.

In every case, the structure must be competitively bid and allow multiple manufacturer's bridge types. These structures may be bid as-designed with alternates or they may be bid as a Modified Turnkey (design-build) project. Highlights and exceptions to the specifications for these bridges are as follows:

1. Department criteria must be followed. Note the following requirements for:
  - a. Redundancy (DM-4 D1.3.4) - A redundancy analysis will be required for non-redundant structures
  - b. Deflection (DM-4 D2.5.2.6.2) -  $L/1000$  for metal bridges
  - c. Live Load (DM-4 D3.6.1.6 and AASHTO LRFD A3.6.1.6) - Pedestrian load of 85 psf to be applied
  - d. Inspection requirements (Pub 238) - Comprehensive inspection at 2-year maximum intervals
  - e. Fatigue detail categories restrictions (DM-4 D6.6.1.2.4) - Category C or better detail must be provided
  - f. Bearings and Joints (DM-4 D14) - Method A used for laminated neoprene bearings.
  - g. Fracture Critical Members (DM-4 PP1.7.7(13))
  - h. Construction and Fabrication (Publication 408) - Bridge fabricator must have current AISC certification to the Major Steel Bridge category with Fracture Critical endorsement.
2. ASTM A500 and A847 materials may be used.
3. ANSI/AWS/D1.1 is applicable for welding structural shapes to tubular members. (Also note Item 1.e. above.)
4. 100% of welds on main load carrying tubular members shall be non destructively tested as follows:
  - a. Full penetration groove welds in butt joints shall be radiographically tested.



- b. Full penetration groove welds in T and corner joints shall be ultrasonically tested (UT). For material less than 5/16" thick (8 mm), UT procedures shall be submitted to the Chief Structural Materials Engineer for approval prior to use.
- c. Partial penetration groove welds and fillet welds shall be magnetic particle tested.
- 5. Main load carrying member components of A709 steel subject to tensile stress shall meet the supplementary notch toughness requirements for the longitudinal Charpy V-notch test specified for Zone 2 in Table S1.2 (non-fracture critical) or S1.3 (fracture critical) of the applicable ASTM material specifications. A500 and A847 tubular members shall meet the requirements stipulated in the Tables for A709, Grade 50 material. Tubular members shall be tested at "P" piece frequency (sampled at one end of each length of tubing supplied) for fracture critical members, and at "H" (heat lot) frequency for non-fracture critical members, all in accordance with ASTM A673/A673M.
- 6. SMAW, SAW, FCAW, and GMAW are approved welding processes, except that FCAW-S (self-shielding) and GMAW-S (short circuit arc transfer) will not be accepted for any welding.
- 7. All Weld Procedure Specifications (WPS's) shall be submitted to, and approved by, the Chief Structural Materials Engineer prior to production welding, including tack welding. Prequalification of weld procedure specifications for welds on tubular members will be determined in strict compliance with Chapter 3 and Annex H of the latest edition of ANSI/AWS/D1.1. For welded non-tubular structures, welding and weld procedure qualification test should conform to ANSI/AWS/D1.5.

GROUP II - Structures not located on or over Department right-of-way but crossing a public roadway

Review, approval and bidding requirements are the same as Group I.

Highlights and exceptions to design criteria for these structures not on or over Department right-of-way but crossing a public roadway are as follows:

- 1. A comprehensive structure inspection is completed as per Publication 238M every 2 years.
- 2. ASTM A500 and A847 materials may be used.
- 3. ANSI/AWS/D1.1 is applicable for welding structural shapes to tubular members.
- 4. 100% of welds on main load carrying tubular members shall be non destructively tested as follows:
  - a. Full penetration groove welds in butt joints shall be radiographically tested.



- b. Full penetration groove welds in T and corner joints shall be ultrasonically tested (UT). For material less than 5/16" thick (8 mm), UT procedures shall be submitted to the Chief Structural Materials Engineer for approval prior to use.
- c. Partial penetration groove welds and fillet welds shall be magnetic particle tested.
- 5. Main load carrying member components of A709 steel subject to tensile stress shall meet the supplementary notch toughness requirements for the longitudinal Charpy V-notch test specified for Zone 2 in Table S1.2 (non-fracture critical) or S1.3 (fracture critical) of the applicable ASTM material specifications. A500 and A847 tubular members shall meet the requirements stipulated in the Tables for A709, Grade 50 material. Tubular members shall be tested at "P" piece frequency (sampled at one end of each length of tubing supplied) for fracture critical members, and at "H" (heat lot) frequency for non-fracture critical members, all in accordance with ASTM A673/A673M.
- 6. SMAW, SAW, FCAW, and GMAW are approved welding processes, except that FCAW-S (self-shielding) and GMAW-S (short circuit arc transfer) will not be accepted for any welding.
- 7. All Weld Procedure Specifications (WPS's) shall be submitted to, and approved by, the Chief Structural Materials Engineer prior to production welding, including tack welding. Prequalification of weld procedure specifications for welds on tubular members will be determined in strict compliance with Chapter 3 and Annex H of the latest edition of ANSI/AWS D1.1. For welded non-tubular structures, welding and weld procedure qualification test should conform to ANSI/AWS/D1.5.
- 8. The redundancy requirement (DM-4 D1.3 4) may be waived
- 9. PennDOT specifications for neoprene bearings and expansion joints shall be used.
- 10. Bridge fabricator must have current AISC certification to either the Simple Steel Bridge Structure category or the Major Steel Bridges Category.
- 11. All fatigue details must be designed in accordance with AASHTO. (The Category C requirement may be waived.)
- 12. Deflection must meet the criteria contained in the AASHTO Guide Specifications (L/500). DM-4 deflection criteria may be waived.

Group III - Structures not on or crossing any public roadway (ie: structures in parks or crossing railroads)

For locally sponsored and owned pedestrian structures involving state and/or federal funding which are located off of the Department final right-of-way and which do not cross a public road, the local owner



may accept review responsibility. Examples of this would be a pedestrian trail bridge in a state or local park over a small creek or a pedestrian bridge over a railroad. In these cases, the AASHTO minimum criteria for design (see AASHTO Guide Specifications for Design of Pedestrian Bridges) may be used provided an independent check of the plans and computations for conformance to design criteria and structural adequacy is completed by a licensed Professional Engineer provided by the local owner. The designer shall stamp and seal the structure plans, and the review engineer shall sign and seal the plans using the following format:

Design reviewed by:	PE Seal
<hr/> Review Consultant's Name, Signature and Date	
The design review is for general conformance with AASHTO design and construction criteria and is not intended to relieve the designer of full responsibility for the accuracy and completeness of the plans.	

If the local owner does not accept review responsibility, the Department may be asked to provide a review. In this case, Group II criteria for pedestrian structures must be followed, and the District Bridge Engineer will approve the plans "For Structural Adequacy Only". In these cases, inspection will be required from the local owner on a 2-year cycle.

Designers and reviewers should be aware that the PENNDOT Publication 408 is very specific in its specifications for construction, and may require prequalification for fabricators and/or specific fabrication practices. If a local project is designed using AASHTO only, the designer must provide special provisions to allow construction practices which deviate from Publication 408. In addition, if the structure crosses over a private entity such as a Railroad, all supplemental design requirements of that entity must be met.

For those pedestrian bridges with fracture critical members (FCM), FCM provisions (See DM-4, PPl.7.7, Note 13) will continue to be required for structures over public roadways and significant water crossings (waterway not able to be traversed by foot during normal flow.) Please note that special provisions will need to be developed by the designer to allow any construction and material exceptions selected by the local municipality.

SOL 431-02-09

Pedestrian Structures and Bridges on Shared Use Trails

Page 6

Recycled (used) bridges may be acceptable provided that the structure meets the following conditions:

- A complete inspection has been performed
- The material certifications are acceptable, or physical testing has been completed
- New connection material is utilized if the bridge is reconstructed or reassembled (new bolts, etc.), and
- The bridge is accepted by the District Bridge Engineer.

Any questions on this policy should be directed to the District Bridge Engineer, or the Central Office Bridge QA Engineer assigned to the District where the project is located.

4310/RSB/rsb

cc: M. M. Ryan, P.E., KB, 8th Fl.

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